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Address.

LABORATORY METHODS IN TUBERCULOSIS.*

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IN spite of the development of laboratory methods during the past ten years, the diagnostician has received little new aid from the laboratory worker in the detection and treatment of tuberculous infections. The one thing most to be desired has been, and still is, some means for differentiating between tuberculous infection and tuberculous disease, or, in other words, a method for determining the presence or absence of activity in a tuberculous lesion. The results of considerable research activity are encouraging, but the fulfillment of this desire still lies in the future.

The bacteriologist has contributed nothing of first importance, but by refining older procedures of finding tubercle bacilli in the excretions and body fluids he has made it possible to detect a greater percentage of positive cases in the examination of such material. The serologist's contributions are promising, but at present are more of academic interest than of practical value.

The diagnostic aid, therefore, which the laboratory can at present furnish must come from the older and well-tried methods; and in order that the laboratory worker may be spared the

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error and confusion resulting from the many technical modifications recommended in various textbooks, the following brief review has been prepared:

I. Staining.—

1. The Ziehl-Neelsen method is still the most dependable and most widely applicable of staining procedures for tubercle bacilli. The carbol-fuchsin solution should be made from basic fuchsin, which can also be obtained in this country under the name of "aniline red." Of the various decolorizing methods advised, 3% hydrochloric acid in 5% alcohol is sufficiently strong and eliminates the danger of over-decolorization.

2. Hermann's stain frequently gives positive results when the Ziehl method fails, and, in addition, may be used by those workers who are color-blind to red.

II. Detection of Tubercle Bacilli.

It should be borne in mind that dead tubercle bacilli stain as well as live forms. Therefore, all glass receptacles used in collecting sputum, urine or other specimens should be previously cleansed with concentrated nitric or sulphuric acid, or in hot sulphuric acid-bichromate solution. Only clean new slides should be used. In order to prevent possible infection to workers, or to preserve specimens which cannot be immediately examined, the sputum may be sterilized by heating in an Arnold sterilizer, or even at 120° C. for 20 minutes in the autoclave. The staining properties of the tubercle bacillus are not appreciably affected.

1. *Sputum.* The direct examination of sputum is adequately described in the textbooks. It is advisable to make smears on slides instead of on cover glasses, because the former give a larger field for search and are less fragile. Where more convenient, the slides may be stained by immersion over-night in carbol-fuchsin in the cold instead of by heating for five minutes.

2. *Concentration of Sputum.* All methods recommended are merely modifications of a neglected method of Biedert, published in the eighties. Antiformin is perhaps the most widely used concentrating (or better, dissolving and homogenizing) agent. Where not purchasable, it may be prepared as follows:

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|--------------------------------|---------|
| Sol. A. Sodium carbonate | 15 gms. |
| Chlorinated lime | 8 gms. |
| Distilled water | 100 cc. |
| Sol. B. Sodium hydrate | 15 gms. |
| Distilled water | 100 cc. |

Take equal parts of A and B (Rosenau).

- To 20 cc. sputum add 65 cc. sterile distilled water and 15 cc. antiformin.
- Shake frequently for 1-2 hours until sputum is homogenized, and allow to sediment.
- Discard supernatant, pipette sediment into centrifuge tube and centrifugalize.
- Discard supernatant, add 0.8% salt solution, mix and centrifugalize. Repeat washing.
- Spread sediment on slide, air dry, fix and stain.

The Ellermann-Erlandsen method gives good results and is of particular service when lack of time causes interruption in carrying out the examination. Recently Petroff has recommended a 4% sodium hydrate solution for homogenizing sputum. In the original Biedert method, 0.2% sodium hydrate was used. A 4% solution is more active and apparently does not interfere with the stainability of the tubercle bacillus.

3. *Blood.* The startling announcement in 1908 that tubercle bacilli could be demonstrated in the blood of individuals suffering with incipient tuberculosis raised high hopes of its value as a diagnostic aid, and inspired new investigations. It has since been shown that the bacilli frequently found in the preparations were undoubtedly saprophytic acid-fasts originating in the distilled water employed. While there is no doubt that tubercle bacilli may appear in the blood stream in miliary tuberculosis, and in the agonal stage of pulmonary disease, their presence, as a rule, is so infrequent that a search for tubercle bacilli in the blood for clinical purposes is not recommended.

III. Cultivation.

As is well known, tubercle bacilli, when freshly isolated from sputum, feces or animal organs, grow sparsely, if at all, on ordinary nutrient media, but may be propagated on the various egg media. Petroff has advocated the use of a meat infusion egg medium, to which

gentian violet is added for the purpose of inhibiting the growth of secondary or contaminating bacteria. Brilliant green may be substituted to advantage for the gentian violet, and has the advantage of exerting a more marked restraint on the Gram-negative organisms. Recent experiments by one of the author's assistants would seem to show that the inhibiting action of either dye is, at the best, a slight one, and that pure cultures may be obtained as frequently when the dye is omitted from the formula. Griffith has recently recommended that sputum be shaken for a short time with an equal volume of 10% antiformin, and the resulting sediment planted without the neutralization of the alkali. This simple method has been tried out with success.

IV. Animal Inoculation.

Animal inoculation is still the most reliable and the ultimate test in proving the presence of tubercle bacilli in suspected material. Its disadvantage is the delay incident to the development of the tuberculous infection in the test animal, but if more than one animal is inoculated one may be sacrificed at the end of two or three weeks and early evidence of infection thus obtained. The suspected material may be sedimented or centrifuged if necessary, or treated with antiformin when other bacteria are present. The fluid or emulsified sediment is then injected subcutaneously into the groin.

V. Secondary Organisms.

Bacteria other than the tubercle bacillus may, at times, be responsible for an aggravation of symptoms in the tuberculous, and may also be the cause of lung infections requiring nice discrimination in order to distinguish them from the tuberculous process. In such cases great care must be exercised in the collection and in the washing of the sputum, because the material examined should represent a morbid product of the infected area itself, free from contaminating mouth organisms. An excellent method is described by Avery and Lyall. The continued absence of tubercle bacilli from sputum of patients exhibiting abnormal symptoms or pulmonary physical signs should lead to a thorough study of the bacterial flora present and to a re-examination of the patient in the various postures described by Garvin. By these means bronchiectasis and sub-pulmonic abscesses may be diagnosed. In syphilis and malignant disease of the lungs the bacterial flora tells little of the true condition. There the continued failure to find tubercle bacilli in the presence of abundant physical signs would naturally suggest the employment of the Wassermann reaction and of the x-ray.

VI. Serological Methods.

The content of agglutinins, precipitins, lysins and opsinins in the serum of the tuberculous is either too small or else the antibodies themselves are too elusive to enable us to use the usual sero-

logical methods for diagnosis. These immune substances, with proper technic, can be demonstrated, but when it is remembered that the immune mechanism in tuberculosis is to a large degree cellular, it is not surprising that its humoral manifestation is slight.

The Bordet-Gengou phenomenon has been utilized with a variety of modifications for the purpose of demonstrating a complement-fixing antibody in the serum of the tuberculous, and thus determining the presence and activity of a tuberculous lesion. The literature has been reviewed by Craig, to whose article may be added those by Petroff and Miller. There is no doubt that the method of complement-fixation, when properly carried out, yields positive results in the majority of tuberculous individuals tested. It is far from being the valuable diagnostic aid that the Wassermann test is, it tells little of the extent of the lesion, and it fails in the prime requirement of enabling one to distinguish between a healed or inactive lesion, and an open or active disease process.

It is eagerly to be hoped that this method may be so perfected that it will take its place beside the classic Wassermann reaction as one of the laboratory's greatest contributions to clinical medicine.

Original Articles.

THE PROBLEM OF PHYSICAL SELECTION APPLIED TO LARGE NUMBERS OF APPLICANTS.*

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WITH our declaration of war against Germany and the subsequent passage of the selective draft bill, a difficult problem of physical selection was presented to the medical profession of this country. I speak of it as difficult for several reasons. In the first place, it is not an easy or a pleasant task, even though it be a patriotic one, to assume the burden of sending your patient or your patient's boy, your neighbor or your neighbor's boy, your friend or your friend's boy, into the dangers and horrors of modern warfare. Secondly, the possibility of encountering that type of malingering which skilfully feigns a physical disability, or just as skilfully exaggerates some slight defect, makes the work potential with many trying problems which require time and calm judgment for their solution. The insurance examiner, or the examiner for positions in the public service has to be on his guard only against that type of malingering

which endeavors to conceal physical defects. I am speaking from an experience of eleven years of continuous service as a physical examiner of applicants for public positions, especially for positions in fire and police departments, during which time I have gained some knowledge of the latter type.

I have seen a padded wig worn to increase the height; soap made plastic, and chewing gum, worked in under a thick head of hair; and also, for the same purpose, coin-size pieces of thick orthopedic felt fastened to the heels with adhesive plaster and skilfully concealed from view. Very often I have escaped a deluge of stomach contents, consisting of water, milk and bananas, vomited by an applicant under weight just as he was about to step upon the scales. The arrival of the psychological moment apparently produced emesis. Occasionally, I have incurred the displeasure of an applicant whose varicose veins refused to go into seclusion after a course of soaking in alum water and a few days' rest in bed before the examination, with the legs bandaged from toe to hip. It is interesting to see the confusion of the applicant who has spent days learning the eye test card by heart, when he is asked to read backward the very lines that he has learned, or only the letters pointed to by my assistant, or an altogether different set of letters.

But such malingering is easy to detect, and neither time nor thought is required to make a decision. The problem is more complex when you are dealing with counterfeited defects, because time and keenness of judgment are necessary to reach a just and accurate conclusion. My work is in a field where competition is sharp and where men want jobs; that of the draft physician is in a field where competition is not sharp and where men do not want jobs. In his field, physical defects have in many cases become luxuries, possessions to be jealously guarded; and thus, whereas my archives contain only letters protesting my rejections, the archives of the draft physician contain only those protesting his selections.

There is a story told of an old gentleman who, while walking along the esplanade with a friend, was much disconcerted by the passing show of women, young and not young, fair and otherwise, whose short skirts displayed an over-generous amount of shapely or unsightly calves. Turning in disgust to his friend he remarked, "Thank God, I flourished in the days when legs were a luxury!" Like him, too, I am thankful that I began to flourish as an examiner in the days when legs, good sound legs, were a luxury. The draft physician has begun to flourish in these modern short-skirted days, when, forgetful of the old fighting spirit of our fathers, too many of us were beginning to acquire a spiritual as well as a physical obesity which generously passes over to the other fellow our share of the job of war, and transmutes into luxuries

* Read before the Charlestown Medical Society, November 19, 1917, also before the Watertown Medical Society, Jan. 9, 1918.

and blessings the inconveniences of unsound legs and of other defects physical.

I do not mean to assert that malingering is the rule, or even that it is always an evidence of dishonesty or lack of patriotism among the applicants. Rather does it seem to me to have its origin in that instinct of domination or pugnacity which in all ages has made men delight to match their strength or wits with one another. But no matter what its cause may be, its presence cannot be denied, and therefore it is unfair to criticize the draft physician who, constantly finding himself on the horns of a dilemma, showed his moral courage by risking censure in reserving his judgment, and gave, as he was told to give, the benefit of the doubt to the Government. He has a right to protest against that criticism which was as needless as it was unethical, and as arrogant as it was discourteous. The medical board with which final decisions rest must necessarily be omnipotent. Their decisions, however, will be less likely to be unkind if they will remember that courtesy, like silence, is golden; that omnipotence is not synonymous with omniscience; and that those who wear the insignia of military rank lose nothing in honor or dignity, when they sweeten the bitterness of criticism with a generous supply of the milk of human kindness. Unfortunately in our profession there are too many who "lack not gall to make oppression bitter."

Accuracy in physical examination depends primarily upon the examiner's knowledge of physical diagnosis and also upon his shrewdness and knowledge of human nature. In the practice of clinical medicine, the presumption of ill-health is uppermost; in work of this kind you must presume that the applicant is sound. In the first case, you start with a known or probably abnormal; in the second, you start with a presumptive normal. Thus, the ordinary mental attitude of the physician is reversed, because while a high percentage of patients are diseased, a high percentage of applicants are healthy and sound. He must especially avoid focussing his attention on minor defects which in no way interfere with the efficiency of robust individuals. Although he is chosen for his knowledge of clinical medicine, he must not forget that he is solving an economic problem in which broad vision and mature judgment are demanded. The examiner, for example, who rejects for flat-foot a good physical specimen whose arches are apparently down but functionally excellent, and passes a mouth-breather, a poorly developed chest, or an arrested tuberculous process, because these cases are sound from a clinical standpoint, has failed to grasp the proper mental attitude of a physical examiner. Furthermore, the physician who goes about this work with the spirit of a sleuth, assuming that every applicant is a malingeringer until proven otherwise, lacks that human touch which lightens the burdens of our fellows, and thus by committing judicial suicide, he misses an opportunity to

convert doubters to a belief in the doctrine of the square deal, and instead makes heretics of many who do believe.

It is not my purpose to review the subject of physical diagnosis. I prefer to speak on the practical side and describe what, in my judgment, is an efficient system of physical examination. Such a system must combine speed with accuracy and eliminate the physical and mental wear and tear caused by the monotony resulting from the needless repetition that accompanies unsystematic work. I firmly believe that in the examination of large numbers of men, much more inaccuracy results from the slowness due to lack of organization than from the speed of systematic work.

At the outset I cannot emphasize too much the value of an able clerical assistant and a well selected place of examination. The importance of expert clerical assistance is absolutely necessary, and as I look back over eleven years of work in this field, I cannot help paying a tribute of appreciation to two assistants, one of whom was my mainstay for seven years and the other for four. To them I owe many of the suggestions that are recorded here and which have made a pleasure of a work that was discouraging enough in the beginning. Long ago, the tailor discovered that his finished work was more satisfactory when an assistant wrote down his measurements. Thus he had an opportunity to keep his attention focussed on his main purpose, the creation of a product that was a credit to his skill. He gathered ideas as he made his measurements, because his mental processes were not interrupted. So it is with the examining physician. Distraction tends to make him inaccurate. Hence he should have no clerical work to do during the actual examination, and there should be present in the examination room proper only one physician, his clerk, and those who are being examined.

The examination headquarters must be chosen with care and should consist of two large rooms, communicating or close by, each at least twenty-five feet in length. A table of some kind, large enough for an applicant to recline on should be part of the equipment. It is a mistake to have the quarters crowded with physicians or hangers-on. Confusion and delay result from several physicians examining in the same room. No greater mistake can be made than to have different physicians doing different parts of the examination, or to employ specialists in their various fields. Save your specialists for consulting work on your deferred or borderline cases, in which their judgment is invaluable. The entire physical examination of an applicant should be done by one man, who should allow nothing to retard the speed with which he travels over the shortest road that leads to the accomplishment of his task.

One of the rooms in the examination suite should be used as a combined waiting, dressing, and writing room for the applicants and placed in charge of an assistant clerk. The other

room should be reserved for the actual work of examining. By remaining in this room until the men are ready, the examining physician will avoid the many irritating and distracting arguments that result from his mingling with the applicants. I am assuming that an examiner following my method can do at least fifteen men an hour. These four physicians, each working for two hours at a stretch with the same clerk, can complete one hundred twenty examinations a day. With another examining room and another clerk, four additional physicians would double this output per day. Moreover, since each examiner works only two hours a day, he will not be greatly inconvenienced, or too exhausted to do the same amount of work the following day. If twenty men an hour are notified for each examiner on duty, he will have, allowing for absentees, about the number he is expected to examine per hour. If the applicants are notified half an hour before the examiner is to begin his work, the clerks will have everything ready when he arrives. Even some of this time may be saved by mailing the blanks to be filled out some days before the examination, with the request that they be filled out as directed and sworn to before a justice.

Five men stripped are called into the examiner's room and asked to stand at attention. The clerk arranges their papers in the order in which they stand. Incidentally, I might say that in a short time examiner and clerk will develop the necessary team work. Whatever notes are necessary to make are called out briefly by the physician. When nothing is said it is understood that nothing abnormal is to be noted by the clerk. I take five men in a group because after experimenting with other combinations of more or less men, I found the five-men group system to be the easiest. Speed is not the only advantage gained by examining men in groups. The opportunity given for comparison of physique with physique, of chest with chest, of feet with feet, is an important asset to the physician, inasmuch as his sense of perception is sharpened and his decisions are arrived at more quickly and with greater confidence.

I usually reverse the regular order of procedure and begin with the feet, because, as a rule, it is more advantageous to conduct your examination so that, when possible, the men will not know what part of their anatomy is under observation. With the examiner acting as a leader, the men are asked to put their heels together and toe out as far as possible. This brings the full weight on the longitudinal arch of the foot, giving you immediately any evidence of marked pronation if present. With feet now parallel, they stand on their toes and maintain this attitude for some seconds, when they go up and down several times in rapid succession on their toes. By this time you have some idea of how the feet perform their function. If you are getting a large number of flat-foot rejections, you are probably keeping

out of the service many men whose feet would soon meet all the necessary requirements after a few long hikes in the army shoe. The length of an examiner's experience may be judged by the number of his flat-foot rejections. A large percentage of flat-foot rejections indicates the novice; a small percentage indicates the old-timer who has learned to appreciate the fact that feet are not such stubborn children when rescued from the evil influences of cruel and abusive treatment. Varicose veins, hammer-toe, loss of great toe, webbed toes, knock-knees, atrophies, shortenings, ulcers, old tuberculous hips, knee-joint troubles, and other deformities are quickly noted in seconds of time. Again, with feet together and parallel, they look up towards the ceiling with eyes closed. Since among men of the draft age the tabetic may be present, the Romberg may help you, and it takes only a few seconds. Following this, have them take their positions at arms' length apart and, with eyes closed, try to touch the tips of their forefingers as they swing their extended arms forward on a level with their shoulders. This also may enable you to discover an unstable nervous equilibrium.

Standing close together again, they hold out their hands in front, palms up and with arms completely extended. Missing fingers, eczema or syphilis of the palms, ankylosis of elbow or wrist joints, and any other deformities of the hands or arms that impair the usefulness, or spoil the symmetry of the man in uniform, are discerned. Next, the fingers are flexed and extended several times to test the function of their joints, and rotation of the forearm is tested by turning down the palm.

The arms are now held straight above the head with the backs of the hands together. Shoulder-joint trouble that limits motion, or any other condition that prevents the assuming of this position becomes immediately apparent. Since this attitude tends to keep the abdominal muscles in a state of relaxation, the order to cough is now given, and hernia, if present, is noted. I do not believe that it is necessary, as a routine measure, to insert your finger into every canal, because, if you do, you will fall into the temptation of rejecting many dilated rings. A dilated ring is not a hernia. It may be a potential one, but so is an absolutely closed ring. Varicocele, hydrocele, and undescended testicle are also considered at this point. Varicocele, unless marked, is not a cause for rejection. When it is marked, it is usually accompanied by other causes of rejection, such as varicose veins of the legs and severe hemorrhoids. Hydrocele is at least a temporary rejection until cured by a radical operation. Undescended testicle in men of draft age is usually of no importance, unless the testicle is in the canal or accompanied by a hernia. Epididymitis of tuberculous origin and orchitis of syphilitic origin are of course reasons for absolute rejection; but in the work of recruiting, acute and chronic

epididymitis of gonorrhoeal origin ought not to be a reason for escaping service, and therefore some provision ought to be made to enable the examining physician to keep these cases under observation until he is satisfied that such applicants may be sent to the cantonment or discharged. When one sees how willingly applicants for positions in civil life undergo the expense and inconvenience of operations for hernia, undescended testicle, hydrocele, hammer-toe, and other defects for which operation is the only remedy, he wonders whether it would not be possible, with the coöperation of the civil hospitals, to have such cases receive whatever treatment may be necessary to make them eligible for military service. In the case of varicose veins, you are not so sure that you will not have recurrences after operation. In Massachusetts, after a careful consideration of much evidence for and against, operated varicose veins are now considered an absolute rejection in the cases of applicants for police, fire, and prison service. Abdominal scars tell their own story. Appendix and gall-bladder scars are of no account, but those subjects, under-nourished and of frail physique, presenting the scars of extensive abdominal operations, should be rejected as poor risks. A marked hernia through an operative scar should also be rejected.

Your five men now execute an "about face." Spinal curvatures, the scars of empyema or kidney operations and other defects are noted and considered on their merits. Bending over forward they are inspected for hemorrhoids. This last request may catch off his guard the applicant who has come prepared to simulate the symptoms of a rigid spine. Facing the examiner again, they are told in a few words to have their chests at expiration when he applies the tape to measure the expansion. This process ought not to consume more than a minute and may take less. The expansion measurement is important to the examiner, because it warns him, in those cases of poor expansion, to be on his guard for trouble. The psychological advantage of this system to the examiner is well illustrated here. Every man in the group is going to try to break the expansion record in order to display his prowess before the others. As a rule, even mature men take an innocent pleasure in boasting of their wonderful chest expansions; thus, in the case of these young men, you are being gladly put in possession of valuable advance information. Nothing tries your patience so much as the man who has elected the rôle of a respiratory malingerer. While you are examining him, he tries to keep alive on about a millionth of an inch expansion. Of course you can beat him by asking him to take a run long enough to get him out of breath, but this takes time. A normal chest expansion ought to be about one tenth of the circumference at expiration. At least three inches then are required for most adults. Less than two inches indicates some possible trouble, an adherent pleura, a tu-

berculous process, an emphysema, or chronic bronchitis. A man with a three-inch expansion ought to give you a good respiratory note through your stethoscope. If he doesn't, he is trying to beat you.

Postponing for the time being the heart and lung examination, we proceed to inspect the pupils with the help of a small flash light, which is indispensable to an examining physician. Passing down the line of men from left to right, we try the reaction of the pupils, observing at the same time inequalities, dilatations, contractions, opacities, adhesions of the iris, exophthalmos, nystagmus, strabismus, and pathological conditions of the lids. At this time, pay no attention to anything suspicious, but reserve your judgment and your comments until you are testing the vision. Passing back along the line from right to left, observe the mouth and throat for missing teeth, cleft palate, diseased tonsils, high narrow palatal arch, and mucous patches. You may also look for scars on the tongue, but remember that scars on the tongue are a flimsy piece of evidence on which to base a diagnosis of epilepsy. The test for nasal obstruction is simple, and the mouth breather of the advanced type presents his evidence objectively. The ears may be inspected for chronic discharges, but in this work of the draft, doubtful cases should be deferred for later examination by a specialist. Don't waste time trying to reach a decision on problems the solution of which will test all the skill of a specialist in that particular field. Remember that competence and efficiency are yours if you only recognize conditions that require further investigation.

We are now ready for the examination of the heart and lungs, which to me has always been the most difficult part of the examination, because it is in these border-line cases that one's judgment is put to the severest test. As my colleague, Dr. Cronin, is going to discuss this important subject, I shall speak only about the method of procedure. One constantly engaged in work of this kind finds himself often bothered with sore ears on account of the pressure of his stethoscope. In my early days this was constant and usually assumed the form of a mild furunculosis at the outer ends of the auditory canals. By taking care of my ears, I managed to avoid much discomfort, but they were always raw and chafed when the work was coming fast. I then discovered that it was due to the sudden and rather harsh removal of my stethoscope every time I wished to percuss or talk with an applicant. Moreover, I didn't know anything about ear pieces then. I remember that I used the small variety that fitted too far into the canals, but experience has taught me that you can't have your ear pieces too big. The bigger they are, the better you hear, and the less they irritate your ears.

In the group system of examining, I saw a further opportunity to save my ears—not to mention the saving of energy and time. Teaching men

to breathe properly, if you are examining only one at a time, results in needless repetition and, moreover, it exhausts your store of good nature. With this scheme you teach five men at once. Adjust your stethoscope and go over the hearts and fronts and axillae of your five men. Then have them all turn around and do their backs. All the while you have not removed your stethoscope. You can carry on a conversation or percu-ss, with your stethoscope in your ears, and you are avoiding sore ears by not continually pulling out and readjusting your ear pieces. Following this you can go over your hearts again, after you have put your men under exertion. Here, again, you save time because you are putting five men instead of one through some vigorous exercise. Examine your men standing up. You can't sit down and do rapid work. If you can't stand up, intensive physical examining is not for you. Although the taking of height and weight is a simple matter, remember that you may save or lose much time on this alone. For work of this kind the so-called office scales are a nuisance. The platform is too small; the beam is graduated for only five or ten pounds; there is a confusion of small weights; your measuring rod fits either too loosely or too tightly into its jacket; and you can't read the height until your applicant steps off the scales. If the rod is loose, it usually slips down and you have to repeat the process. Often, on account of the small size of the platform, a tall man finds it difficult to maintain his equilibrium and puts your platform attachments out of commission. If you happen to have a separate measuring stick, either fixed to the wall, or set up on a small box, don't have it fifteen or twenty feet away from your scales. For this work, the most efficient measuring stick is one that comes in two sections and has a fitted joint. The only objection to this stick is that it is slightly inaccurate on account of the difficulty of holding it exactly perpendicular to the floor. Since in this work of the draft the accuracy required in measuring police applicants is not required, this error may be entirely ignored. By adding a quarter of an inch to the measurement of each applicant, the error will be offset. In other words, with any stick that is not set permanently perpendicular to a horizontal platform, your measurement will be under and never over the exact height.

Don't weigh and measure each man individually. Measure your men first, then weigh them. It saves time because it is good psychology. Have your men turn their backs and pass down behind them with your rod. Less than ten seconds will suffice to get the heights of all. For weighing, I prefer the heavy scales used in business houses. Its beam is graduated up to fifty pounds, and with the one-hundred pound weight on, you have no changing of weights or problems of addition to bother you, as it is necessary to change your weight only when a man

weighing over 150 or 200 lbs. comes along. The only objection to these scales is that you must stoop to read them. This is avoided by the use of a chair.

All this sounds trivial and elementary, but let me say that if a man wants to get an idea of monotony let him take the heights and weights of fifty men on an office scales, taking the height and weight of each man before passing on to the next. I'll venture to say that he can't do it in less than twenty or twenty-five minutes, whereas it ought not to use up ten minutes by the method I have described. Dante has pictured no more dreadful fate than to be condemned for eternity to take the heights and weights of your associates in the hereafter on an office scales the measuring rod of which slips down before you can take your reading. I cannot emphasize too much that it is in the apparently simple parts of the examination that much time is lost. Let no examiner deceive himself that he is thorough because he is slow. His slowness is due to confusion, laziness, or slow mental processes that prevent his arriving at quick decisions.

Vision and hearing remain to be tested. As a matter of fact you have already noted those with defective hearing while giving your orders for the various positions that you ask the men to assume. Thus you are fairly sure of the man who tries malingering. Keeping your men in a row with their backs to your assistant twenty feet away, have him repeat some short expression while you pass down behind the applicants, closing firmly each meatus.

The standard of vision required for drafted men is not high, 20.40 with one eye, and 20.100 with the other. With your men twenty feet from the card, all but one with their backs towards it, begin with the twenty-foot line. Test the right eye first and then the left. This is rather for the convenience of your assistant than for expediting the work. Cover one eye with a card and avoid pressure. I always have my assistant point to the letters that are to be read. The letters on the 20 ft. line of the regular test card are usually A P E O R F D Z. The man with normal vision will of course read them correctly. The slightly astigmatic man may miss one or two but may be safely passed as having practically normal vision. If a man calls P, F; O, C; R, K; or Z, E; he is not trying to malingering. He is astigmatic and in nearly every case will fulfill the minimum requirements. Remember that the astigmatic man who is not myopic will, as I have pointed out above, call the letters by something that proves him to be neither a guesser nor a malingerer. For instance he will always call A, A. He may call the "P" an "F," but you can readily see that there is a resemblance between these two letters. On the other hand, if you have an applicant who calls the letters in the 20 ft. line by something that they do not resemble, he is either myopic—in which case he ought to be able to produce

glasses—or he is malingering. If when you try this same applicant on a 100 ft. and 40 ft. lines, you discover that he can read neither one of these, there is no doubt—assuming that he is a man with education enough to read his newspaper—that he is a malingeringer, if he cannot produce his glasses. In work of this kind you usually fix your minimum standard against admitting to the service those who are short-sighted. Your long-sighted man or your moderately astigmatic man is very seldom ruled out by the low standard required for men in the draft. Therefore a slight knowledge of how the astigmatic man's vision reacts to the 20 ft. line will enable you, by the process of elimination, to recognize the myopic or the malingeringer. To differentiate between these is, as I have said, not easy unless the myopic man can prove his honesty by showing his concave glasses. If a man says he is blind in one eye and there is no scar or opacity to account for it, try the light reflex. Blindness in one eye abolishes the direct reflex in this eye but the consensual reflex is preserved; *i. e.*, while the pupil of the blind eye does not react to direct stimulus, that of the good eye indirectly reacts when the blind eye is directly stimulated. However, no time should be wasted on doubtful eye cases; and, moreover, no physician should do an applicant the injustice of accusing him of malingering until he has been looked over later by a consulting board of eye specialists and proved to be one.

When a man is rejected for any cause, it is a waste of time to have a second physician repeat the whole physical examination. Rejected and doubtful cases should be called in again at a time set apart for consultation work, and be considered merely from the standpoint of the actual or doubtful physical defect. The syphilitic and the epileptic will very often be passed, and indeed it is useless for any one to maintain that with the ordinary routine of physical examination which is followed today, the passing of such cases is an evidence of carelessness or incompetence.

Such is the outline of a system that has been gradually evolved from a long experience. I give it to you for what it is worth. It is not complex though it may appear to be in the telling. It is, in a word, the simple coöperation of trained medical men with trained clerical assistants. Fifteen men an hour mean four minutes to a man, a saving of six minutes per man against a system in which ten minutes are spent on one examination. For every one-hundred men examined, six hundred minutes or ten hours are saved, in which time many more men can be examined, many rejections verified, and many doubtful cases decided. I have made some suggestions that may not be possible to follow in examining men for the draft. I know that speed is criticized and I know, too, that many so-called lung specialists are shocked at the idea of any one examining the lungs alone in less than half an hour. Is it any wonder that efficiency ex-

perts think us to be most inefficient as a body, especially in the matter of time-saving, and is it any wonder that to a layman was assigned the task in this present war of introducing some time-saving efficiency methods into the very operating rooms of our hospitals?

War, always prodigal of men and their opinions, but ever jealously conserving and absolutely controlling their arts, and crafts, and sciences, always impatient of the old, the sluggish, and the nonessential, but ever demanding the new, the nimble, and only the naked essential, pays but little heed to Chauvinistic opinion or jarring criticism. If you can't applaud, don't snarl; if you can't add, don't subtract; if you can't multiply, don't divide; if you can't raise a quality to the n th power, don't lower it to the n th root. If you have a liking for mathematics, here is a definite problem of practical importance. If each draft physician spends one half-hour examining the lungs of each applicant, how long will it take the United States to raise an army of 3,000,000 men?

Because dire necessity has never demanded that in the clinic activity be substituted for inertia, or the sprint for the dog trot, it does not follow that nimble efficiency has not been long knocking at the door. In this supreme national crisis, nimble efficiency *will* not and *cannot* be denied, for on every side the call is for speed and accuracy, energy and quick decision. To War, the medical stand-patter loudly protesting against methods that are not only progressive, but absolutely necessary, is but the sepulchral voice of one putting in a clinic, and unwittingly burlesquing that old mythological tale of lightning defied, under the delusion that he is Ajax Aesculapius. War only laughs at him, "as the sea laughs at palsy for its billows," because before he blows the assembly call, it has already been decreed in the words of the old proverb, that in his service, for medicine, as well as for industry, commerce, finance, and statesmanship, the race is to the swift and the battle to the strong.

RE-EDUCATING GERMAN WAR CRIPPLES AT DÜSSELDORF.

By DOUGLAS C. MCMURTRIE, NEW YORK CITY.

Director, Red Cross Institute for Crippled and Disabled Men; President, Federation of Associations for Cripples; Editor, "American Journal of Care of Cripples."

ALTHOUGH there is considerable public opinion in Germany favoring provision for the rehabilitation of disabled soldiers at the expense and under the direction of the imperial government, the work up to the present time has been done under auspices more or less local. The reconstruction institutions have usually been organized and operated through the co-

operation of state authorities, municipal administrations, and private charitable societies.

One of the most interesting examples of a re-educational institute established under such joint auspices is the *Verwundetenschule* at Düsseldorf, the work of which has been very fully described in a recent report. At this school the disabled soldiers are given the special industrial training required to enable them to return to a status of independence and self-support.

Düsseldorf is a hospital center for the Rhine Province. Fifty hospitals are located there. War relief is in the hands of the Headquarters for Voluntary Relief, a society amalgamating the interests of the local Red Cross, the Patriotic Women's League and the city administration. Soon after the war began, a department was formed for vocational advice and training for men wounded in the war. The first plans of this bureau took body in one of the city's school buildings, where in February, 1915, some twenty general educational courses were offered to men able to attend school for a few hours a day.

The idea was that these courses in German, penmanship, spelling, mathematics, civics, book-keeping, and other immediately practical subjects, would give the convalescents a chance to improve themselves and at the same time would give the vocational guidance committee a line on each man's capacity for work when the time came later to train him for a trade. The teachers were from the industrial and commercial secondary schools of Düsseldorf and had their salaries paid from the city budget. Special teachers were secured from among the patients in hospitals or, for this purpose, were released from military service by the authorities. Through coöperation of the provincial government, the city, and the Headquarters for Voluntary Relief, the school was established in suitable buildings, a new building for workshops was erected and equipped with machinery and tools, technical courses for many trades were instituted, and provision made for the maintenance of the pupils.

Where necessary, an allowance is paid to the cripple's dependent family until he is once more earning wages. And it must be remembered that even when that time comes he still receives his pension as a disabled soldier. The pay he may come to earn does not change the amount of his pension, which is determined by the seriousness of his disability. Neither is the fact that he is receiving a pension permitted to influence an employer to underpay him. It is the business of the employment committee to see that war cripples are paid just what they earn—no more, no less.

The work of the vocational guidance committee, particularly of those members who act as friendly advisers to the wounded men, is of primary importance. They come into contact

with the convalescent just at the time when discouragement registers highest and ambition lowest. The one-armed man who was once a carpenter or a stone-mason is sure that he can never again do physical labor. He is thinking vaguely of a civil service job, or, failing that, of some ill-paid, sedentary occupation which takes no skill. Or perhaps he is thinking only of his pension. Sometimes he is a victim of the new war disease "work-sickness," a genuine weakness of the will as regards labor.

The vocational adviser starts a course of will-training by making friends with the patient and persuading him to talk of his past life and of such plans as he may have thought of for the future. Where he was a tradeworker he can usually be interested afresh in his trade. A man who has given up all idea of ever working again as a machinist cheers up considerably upon learning that by taking a course in mechanical engineering at the *Verwundetenschule* he can step into his old shop as foreman. And if formerly the cripple was an unskilled laborer he may get a new grip on ambition on being convinced that the wages and happier interests of a craftsman are within reach. Attendance at the school is wholly voluntary and so is the choice of future occupation, but the vocational advisers try to get each man to make use of his former experience rather than to turn unnecessarily to a strange field.

Courses are given for metal workers, mechanical engineers, telegraphers, electricians, carpenters, cabinet-makers and wood-workers, workers in the building trades, locksmiths, sculptors, stone-cutters, paper-hangers and plasterers, printers, photographers and etchers, bookbinders, cardboard and leather workers, dental mechanics, farmers, minor government employees, stenographers and office workers. The trades-courses prepare for the master-workers' examinations which can be taken at the Düsseldorf Board of Trade. Time spent at the school counts as time spent as a journeyman's apprentice. Examination fees have been waived for war cripples. Also, instead of offering a pretentious sample of work as a "masterpiece," the would-be master worker simply has to prove to his examiners that he can do what has to be done by a first-class workman of his trade. The Board of Trade has provided for a special tradeworkers' course in preparation for the examinations.

It is wonderful, according to the directors of the school, in how short a time an almost helpless man can become efficient. A course of five weeks in hand-training can give him a handwriting which is said to be free and characteristic. He learns to do things for himself without help: to dress, shave and feed himself, to swim, bowl and put the shot, to handle a typewriter and to use tools with which he is familiar. From eight to ten weeks' training in the machine shops makes him ready for employment, running one of the highly specialized machines

of modern industry. Dr. Karl Gotter, the school's director, holds that in the time required for a cripple's wound to heal he can attain the normal workman's maximum output of labor.

In the hand-training course, one-armed men are taught by one-armed men. By the use of special drawing-boards and instruments, crippled pupils can compete with normal draftsman. Emphasis is laid on sports and especially on swimming. One pupil recovered the use of a paralyzed lower arm by three months' practice in the water.

Men of the technical courses for the building trades were able to do all the construction work on a seven-thousand-dollar building for the school's workshops, as well as on a set of model three-room apartments erected and fitted for practice. This course fits men to be building carpenters, if they are physically able; or to be draftsmen, foremen or supervisors of roads, streets or waterways. Architectural drafting and building practice go hand in hand. The building is done from working drawings of ground-plan, section and superstructure. The class has instruction and practice in joining, floor-laying, simple plastering and timber-framing, and in the construction of panelled walls, gutters, waste pipes, doors and windows. At the time of the first year's report, five students had passed their examinations as master workers, seventeen others were being prepared for the next examinations and five men were intending to go on for more advanced work to a regular school of building construction.

The work of the mechanic is so varied that no matter what a man's injury he can be fitted in somewhere. If he can no longer be used in the shop he can be trained as a supervisor or can make use of previous experience in one of the administrative departments. Many injured metal-workers take up their trade as draftsmen. The courses in mechanics, physics, electrical engineering, and drafting prepare for these positions, and the machine-shop gives him practice which it would be hard for a cripple to obtain in a factory.

The mechanical workshop of the school has become self-supporting. It fills orders and the pupils are paid a small wage. Pulleys, belt-wheels, bolts, machine-parts, and screws and nuts of all kinds are some of the many things furnished to Rhenish machine factories. The workers in this department are mostly men with stiff or paralyzed arms or with leg injuries. Men with stiff or shortened legs can work well at the turning lathes, although until their wounds heal, they have to take time off for rest. A limp arm is made more supple by filing work. After patient practice, a man who has lost all but the thumb and little finger of one hand was able adequately to grasp with it.

It is not hard to place the wounded soldier who was formerly a printer or photographer. In the classes for men of the graphic trades are

type-setters, compositors and lithographic printers, proof-readers, poster artists and teachers of book-decoration. Some of these, after curative exercises have found that they could go on with what they were doing before the war. A type-setter whose hand had been badly mutilated so that he could not hold his tools, after three months of hand-training could make his stiffened fingers do nearly all the work they had done when perfectly flexible. Two printer's assistants were advanced in their earning ability by theoretical courses. A compositor with a crushed hand has been trained as a proof-reader and now has a good position. Two other compositors were made ready to pass their master workers' examinations. A photographer was prepared to make both line and half-tone plates.

The upholstering and paper-hanging trade is one of the few which has not become a machine trade. For this reason it is the harder to adjust crippled workers to its requirements. One man must usually do many kinds of work, necessitating many and varying motions. However, in Germany the paper-hangers' union has passed resolutions accepting the responsibility of finding work for members now war cripples. Employment in large concerns where it is possible for a man to keep at some one process is a solution for some cases. Others are trained for positions as foremen, estimators and office-workers. Mattress-making is another possible occupation, although to do this a man should be able to work in both sitting and standing positions.

The crippled painter and whitewasher need not feel that he is debarred from ladders and scaffolds. Skill in the use of prostheses will give some men almost as much freedom of movement as before. Where he must look for some less active livelihood he has a choice of several profitable lines. If he has decorative taste the Düsseldorf school prepares him for sign painting, to do stencil work, or to make drawings for painters' firms or pattern factories. If he has no special talent, he can be placed in a wagon factory, furniture factory or metal-ware factory to do painting, varnishing, grinding or leather-scraping. In large plants the men will have work all the year, escaping those months of unemployment which are serious drawbacks of the trade. Men with internal injuries, after taking a course in bookkeeping, can find positions as stock managers, using all their previous knowledge of painting and plastering. The school's business is to fit a man to make just such transitions, often training him to fill a place which has already been offered him by his old employer.

The course for stone-cutters, sculptors, wood-carvers and marble-workers welcomes men who have had no previous experience but whose inclination leads them to try this kind of work. They can be trained as assistants and can be placed according to their injury in some one of the branches of the industry. Stone-workers

who can no longer work in a standing position can be trained to cut inscriptions. Men with internal injuries or with nervous troubles which prevent them from working in a confusing place can find quiet occupation at wood-carving. Men who cannot do heavy work are taught to construct small models, to do plaster-cutting and to make small casts. As in other trades, the man with some natural ability for drawing is the more easily turned to profitable work. One man who had lost his right thumb learned pottery work, firing, the painting of stone vases, and glazing. After his discharge from military service, he expected to go to a school for ceramic arts. An art locksmith who had been shot in the shoulders and for a long time was helpless, learned to design arts and crafts metal work and hoped to be able to execute his designs in the shop. There he would be taught chiseling, chased work and the coloring of metals. The workshop in this course fills commercial orders, and the students are paid for their labor.

Experience in training wounded woodworkers for positions shows that it will be possible to place practically every student. One-armed men or men with paralyzed arms and hands can be used as polishers and stainers or can be prepared for places as draftsmen, designers, foremen, or clerical workers for a workshop. One-legged men can work at the joining bench or at machine-woodworking. It has been found that the injured and paralyzed limbs are soon benefited by a carefully increasing routine of labor. The workshop and machine-shop of this department are equipped with the newest machinery and tools, the machines having individual motor drive. Twenty-four men in the first year passed their master's examination as furniture carpenters and cabinet-makers.

Wounded soldiers who have had experience on railroads or in the postal or telegraph service are usually taught telegraphy, along with the compositions, arithmetic and geography that an operator needs to make him efficient. And while a man is learning the practical technic of operating, he is also studying the theory of electricity and electro-magnetism and familiarizing himself with batteries, circuits and the nature of the Morse instrument. The students learn to set up the elements, to connect them in the circuit, to connect the batteries with the apparatus, install wires between two stations and to locate the trouble when the wires are out of order. In preparation for using the instruments the men are given hand exercises on detached keys. The school has seven sets of instruments and two students work at each, one sending and one receiving. After hand-training, a left-handed man can equal in skill the right-handed operator. Often, too, a cripple can learn to telegraph perfectly with a crippled hand, which grows more and more flexible with use.

In the course for electricians, unskilled workmen are trained for such handy-man jobs as

switchboard operating and armature winding, while men with experience in electrical work or as skilled trade-workers in related occupations are trained to do installation and repairing. The work is subdivided according to the pupil's choice of occupation. The course conforms to the requirements of the German Electricians' Association and a study is made of the most important union rules. The set of three-room model apartments, built by the students of the building-trade courses, is used for practice in installation. Some of these rooms have been plastered and papered by the students of those courses, and others have been kept in the stage of structure-frames only. Each apartment is equipped with a meter and a steel armored conduit. After testing for insulation-resistance, the student-electricians tear down what they have done and do it all over again.

On account of the scarcity of petroleum small towns in Germany feel it a patriotic duty to have electric lighting. For this reason special attention is paid at Düsseldorf to training men to do wiring in the small communities. There has been such a demand for workers in industrial plants, as switchboard operators and armature winders, that wounded soldiers from other provinces have been sent to Düsseldorf for the training. The school now has a large switchboard in connection with direct and alternating current generators and a storage battery. The student learning to operate this at first works from a simple sketch of a switchboard, setting up the connection between a motor, starting-switch, and speed regulator, changing the direction of current flow, and so on through the other processes. He learns to regulate resistance at the main switchboard, and soon comes to know something about the current flow from following the diagram of the plant tacked up over his head.

Without some theoretical training, the war cripple easily becomes confused by the complexity of switches and instruments in a central station. It is harder for him to concentrate because of all the bewildering war experiences he has gone through.

The first students in meter-testing were sent to the school by firms who meant to employ them after training. And now on completion of the school course, when employment has been found for a man at a testing-station, an arrangement is often made for him to take a practical course in the shops of a meter factory. These firms have given apparatus to the school and co-operate with it in every way.

The training of armature-winders was also started by Düsseldorf employers who needed men and applied as a last resort to the employment service of the Headquarters for Voluntary Relief. The school at once began to train a small group of men. After a grounding in theory, which includes a study of the dynamo, the motor, and the construction of the armature, the class

makes sketches of the fundamental armature windings. Preliminary exercise in winding is given on an apparatus made in the carpentry shop. Much of the apparatus used in putting together the armatures is constructed by the learners themselves. Fourteen different types of motors have been repaired and wound for local motor-shops by the class. Starters and other resistance apparatus have also been repaired. An armature-winder must have the use of both hands, but a man who has lost a leg or an eye can easily follow the trade. Since there is much work in an armature-winding room that must be done at a lathe a proportion of its workers must belong to the skilled trades.

Men who have worked in the electrical trade, plumbers, and locksmiths are easily trained for electrical fitting and installation. Low voltage installations can be made by workmen who have no special knowledge of the electrician's trade, but the higher voltage work requires trained men who understand the necessary safety measures. Complete paralysis of an arm or hand excludes a man from the fitting work, but with a partial paralysis he can usually do the work. War cripples preparing for installation work take from three to five months of training. Meter-testers can train in four or five months, and get later their practical experience. A heavy leg injury disqualifies for an installation position, as the worker must be able to climb ladders and mount scaffolds.

There is one comparatively new field of labor in which the demand for workmen promises to be much greater than the supply for some time. That is the dental laboratory where mechanics are needed as assistants, moulding and carving artificial teeth, preparing india rubber and its substitutes, and making repairs in celluloid, aluminum, porcelain, and metal. The work is interesting enough and well enough paid to attract intelligent men, and entails no physical strain. It is especially suited to men with injuries of the lower jaw who should have steady supervision by a dentist. Opinion among German physicians and dentists favors training war cripples into this occupation, and courses have been established at Strassburg and in Frankfurt-am-Main, as well as in Düsseldorf. The plan is not new. Years ago the Central Association of German Dentists suggested giving this teaching to deaf-mutes and this was done in a chain of laboratories, some of which still successfully employ these workmen. Each laboratory is supervised by an expert dentist who makes written pledge that the mechanic will not be allowed to do operative work. Before a man can enter the training course at Düsseldorf his qualifications are most carefully considered by a committee of physicians and dentists. Members of other skilled trades are especially desired for this new trade. Cases of heart trouble, deafness, and injury of the leg and often of the hand can be employed.

The training of a dental mechanic includes the fundamentals of physics and chemistry, human anatomy, and physiology, special attention being given to the structure of the mouth cavity. A study is made of the technic of india rubber, porcelain and metal; of repair work and of dental apparatus. With theoretical instruction goes training in the processes of dental mechanics. Visits are made to instrument factories and to dental laboratories. The course covers a period of nine months.

For the sake of a proper balance in the supply of labor, and for the good of the war cripples themselves, the vocational guides make a brave effort to keep tradeworkers from turning to office work. But after all who can be returned to their old trades have been induced to continue in them, there still remain certain groups for whom clerical training is the only thing practicable. Men who formerly held minor government positions are trained in a course for civil service workers. This is also open to those holding certificates entitling them to civil service jobs after discharge from military service, and to men so severely injured that they cannot do physical labor. This last group is the most motley and pitiful of the Düsseldorf classes. A miner, a weaver from the mountains, a waiter from a little restaurant, a chauffeur—to take such men, shattered in body and disheartened by long illness, to put hope into them and to persist until they have made up their deficiencies and are again ready to take up life with pen and ledger, calls for every ounce of inspiration and man-making ability that both teacher and pupils possess.

Another office course is intended for former travelling salesmen and sales clerks, now forced by injuries to look for office positions, preferably in their old line of business. In addition to the German, bookkeeping, commercial arithmetic, and typewriting offered in all clerical courses, these men are given training in commercial law, business correspondence, and business management, with especial attention paid to the relation between employer and employee. They take up the handling of merchandise, buying and salesmanship, and study every step in the management of an industry from its establishment to the last lawsuit to collect payment for bad debts. For a laboratory the class has a model office where it practises filing, card-cataloging, and the handling of adding-machines and dictagraphs. As an elective, students may take either English or French. From the report, the instructor keeps peacefully to the good old standard subjects such as "The Weather," "The Clock," and "What We Use in School."

A ten-weeks' course for office assistants aims to return men formerly employed in the workshops of large industries to the same shops as stock-clerks, accountants, or clerical shop-workers of one kind or another. Here compli-

eated bookkeeping is not needed. All that is essential is to make the workman familiar with technical office terms and processes; to give him such experience as he might by good luck pick up in the employ of a firm. For practice this class actually conducts all the business of the school workshops. About one-fourth of the class studying during the first year were promised work by their former employers.

Of course Germany has a back-to-the-land movement for wounded soldiers. With the co-operation of the Department of Agriculture, farm settlements for war cripples have already been started and are being managed by land companies. All that the wounded soldier has to do, once he has satisfied the authorities that his place is on a farm, is to report with his wife and family at the settlement to which he is assigned. The company will have allotted him the use of as many acres as the authorities decide that he can cultivate. It will build him a house and outbuildings and will have made arrangements for marketing his produce along with that of the rest of the community. If he has capital, he may own his own place; or, he may purchase it as soon as he is able.

The agricultural course at Düsseldorf corresponds to the short winter courses which German agricultural schools offer to farmers. It is intended for wounded farmers who would like to know more than they do know, and for men who would like some agricultural pursuit in addition to their regular occupation. For instance, a rural letter-carrier or a signalman can very well add to his income by poultry-raising, gardening or bee-keeping. Courses are given in farm management, plant cultivation, animal husbandry, business correspondence, and agricultural arithmetic. While there is no school farm for the use of students, arrangements are made for them to work on agricultural estates, in dairies, and in poultry establishments.

Of the occupations which may be carried on at home, small farming is perhaps the happiest and most profitable for the cripple. Its interests and physical activities are varied and may be adapted to each man's capacity. And the farmer's market is inevitable—it is created by public need and not by public sympathy. The other home industries are not so dependable. So far they seem to be industrial compromises, although there are, of course, instances of home industries like the Worsaeed carpets and the Black Forest wood-carvings which are genuine and profitable contributions to the world's productivity. Certain war cripples will be obliged to work at home if they are to work at all. Cases of serious paralysis, of total blindness, tuberculosis, epilepsy and extreme nervousness require attendance, periods of rest and isolation. Work will make them happier, but it must be carefully selected, not too exacting, and not too monotonous. What are these men to do?

The home industries which at present offer some real chance of a livelihood are knitting, weaving, wood-carving, basketry (including the making of wicker furniture), knotting work, and metal-working. But in every one of these crafts the crippled worker needs protection against under-payment. He should be provided with a market, prices should be adjusted for him, and, above all, he should be taught how to make articles which people will really want.

So far, what Düsseldorf offers of most value for such workers is a plan. Dr. Karl Gotter proposes that a certain number of home industries be organized under the management of a society financed by public subscription and by government appropriation. At a central training school the cripples can be maintained until they are skilled enough to work at home, but after they go home they will be visited regularly by a travelling teacher or inspector, who will keep the products up to an artistic and workmanlike standard, teach the men new things about their craft, and encourage original work. The articles produced will be advertised and sold at sales-stations managed by the society. Under such an arrangement home-manufactured goods would have an equal chance with commercial goods at popularity and good prices.

Of the 2,000 men who attended school the first year, about 600 were placed in employment. A good proportion were taken back by their old employers. The need of workmen is now so great that the employment bureau can easily find work for cripples trained to a definite occupation. The real test of the school will come after the war, when the disabled workman has to meet the competition of the returned soldier who is sound and vigorous.

In the old days—and in the United States most of us have been living in the old days as far as treatment of the crippled worker is concerned—the wage-earner who became physically disabled was compelled to move one or two steps down the labor ladder, and, in consequence, down the social ladder too. The main concept which has been developed in the re-educational schools is that the cripple must move up. There is more room for him in the upper rungs than at the bottom. And he can be quickly taught to climb.

PHYSICAL SELECTION IN ITS RELATION TO HEART AND LUNG CONDITIONS.*

By M. J. CROXIN, M.D., BOSTON.

THAT most eminent physician, Sir William Osler,¹ has recently said: "In the grim game of war, bullets and bacilli put men out of action, and the best general is the one who has the lowest percentage of wastage by the former with as little as possible from the latter. An outstanding feature of the present war has been a reversal of the usual proportion of killed and

* Read before the Charlestown Medical Society, November 19, 1917.

wounded to those who have died from disease. But there is another group, the unfit, who should be checked at the recruiting office, as they furnish a large contingent in our hospitals and add a needless burden of transport, care and pension.

"What I desire to urge, in a few words, is the necessity of stopping at its source this group. It is impossible to deal with all types of unfit men, but let me briefly indicate those who should be kept at home.

"First, the Mouth Breather. 'Shut your mouth and save your life' is the title of Kit Catlin's famous pamphlet, which should be reprinted every few years for distribution. The original title of the pamphlet just referred to was 'The Breath of Life,' and Nature meant this to pass through the nose, an organ which, medically speaking, reaches to the diaphragm. Blocked nostrils mean: (1) Weakened tonsils and pharyngeal resistance; (2) Enormously increased liability to bronchitis and catarrhal troubles of all sorts, and (3) lowered defense against the pneumococcus group. The hospitals have had to bear the strain of caring for hundreds of these men who should never have passed the examining board. No matter how good his chest, or how keen he is to go, or how good his muscles, be merciful to the Army and keep the mouth breather at home. Campaigning is not for him.

"Second, the Hippocratic Chest, as it may be called,—long, narrow, thin and with, as so often happens, the vertically placed low heart. Cut out unsparingly the owners of these. If lungs and heart are not in a good 'case,' the head is of no use in war.

"It may seem very saucy for a man who has never been trained to examine recruits to venture to give advice to his superiors, but this brief note of warning is sent to my colleagues in the United States in the hope that they may profit by the experience of one whose work has been largely with the wastage of the recruiting office."

These remarks are very pertinent to the subject which I am to discuss. Furthermore, they strongly emphasize the fact that the ability of the soldier to withstand the strain and shock of modern warfare depends in great part upon the soundness and integrity of the organs situated within the thoracic cavity.

The selection of men for military service from among a people engaged only in the pursuits of peace for the past fifty years requires the physical examination of a large number in the shortest possible time. Therefore, in conducting examinations, the examiner must combine speed, thoroughness, and accuracy of judgment. There are those who doubt that this combination is possible without sacrificing thoroughness and accuracy of judgment to speed, but after a trial of the group method, as outlined by Dr. Downing, I am convinced that it can be done. In

support of this contention the following, from an editorial in THE BOSTON MEDICAL AND SURGICAL JOURNAL, is of interest: "Rapid examinations do not mean snapshot diagnosis, but merely the passing of rapid judgments upon facts actually presented to the examiner. Doubt is often unjustly engendered by lingering too long upon a state of fact that will otherwise be rapidly and accurately disposed of. To be effective in this work, the examiner must only learn to make a diagnosis when the facts are before him; must develop his powers of observation; must learn to be quick in making his decisions,—indecision is fatal everywhere; must learn to pass the rare and interesting cases by just as quickly as the ordinary one; and must learn not to spend too much time between each examination. The whole matter of thorough examinations, combined with speed, resolves itself into the elimination of time waste and duplication. These two elements mastered, no amount of speed is to be feared. What advantage is the lengthening out of the time of examination, if it is at the cost of repetitions of hearing, seeing and feeling? The medical examiner must be able to see when he sees, hear when he hears, and feel when he feels, without repeating every sensory impression to make sure that it is so."

If a tuberculous process is found at either apex, why waste time trying to locate another process at the base? Or if valvular heart disease is discovered, why bother to see whether there is an enlarged liver or edema of the lower extremities? It is only necessary to take sufficient time to enable one to describe briefly the defect which is a cause for rejection.

Past history has no place in these examinations except as confirmatory evidence, after examination has revealed some defect or suspicion of defect. For example, if an abnormality or suspicion of abnormality is discovered, a few questions may bring forth a history of susceptibility to attacks of bronchitis, either alone or associated with asthma, of pleurisy, or of a cough extending over a long period. With heart murmurs, the history of frequent attacks of tonsillitis or rheumatism may be elicited. In aortic lesions inquiry may reveal the history of past syphilitic infection, which it is well known has a distinct liking for the aortic orifice. But as a rule decisions are rendered almost wholly upon objective evidence.

Inspection.

This, to my mind, is very important, as it reveals much in a minimum of time. Almost at a glance can one take in any evident departure from the normal from the eyes to the waist line: the degree of robustness; muscular development; the eyes for exophthalmos; mouth breathing; neck for enlarged thyroid and lymphatic glands; chest characteristics,—whether of the vigorous, robust type, or the long, thin, flat type, so indicative of delicate constitution; the barrel-

shaped chest of emphysema; and signs of retraction of the supra- or infraclavicular spaces. A deep breath will reveal any inequality in the expansion of the chest or of the apices, and also furnish an estimate of the air capacity of the lungs. Actual measurements of chest expansion afford the most accurate information as to lung capacity. An expansion under two inches should arouse some suspicion of lung defect. The normal subject of draft age, however, should do three inches or better.

Percussion I believe to be of minor importance. What has been said in regard to history applies to percussion as well. Its use is secondary to auscultation and necessary only when auscultation reveals some abnormality.

Auscultation.

It is necessary to auscult only the bases, axillae and tops above the third rib in front and the mid-scapular behind. With ten or a dozen good breaths an opinion can be formed as to lung condition which will be accurate ninety-nine times out of a hundred. This applies to the normal chest and to marked abnormalities. The doubtful or border-line case of course demands more time, but I have been impressed with the fact that the more prolonged investigations do not materially change the first impressions.

The steps just outlined are all elementary, but after examining a large number of men in a short space of time, I am convinced more than ever that the application of these fundamental principles makes for speed, accuracy and greater efficiency than the slower methods of the tuberculosis clinic. In other words, the methods of the clinic or consulting-room must be replaced by an appreciation of what is required and by the application of common sense.

On the assumption that all subjects are likely to experience active service in trench warfare, the following non-tuberculous conditions found in the chest constitute causes for rejection: *First*. Subjects showing developmental defect of the thorax associated with an apparent delicate constitution, even in the absence of definite disease. Such men are underweight, have poor resistance and consequently are poor risks. *Second*. The mouth breather, with, as Osler says, a susceptibility to all kinds of respiratory infections. *Third*. Emphysema of any grade, even without coexistent bronchitis. *Fourth*. Chronic bronchitis and asthmatics. *Fifth*. Those showing any sequelae of empyema, sunken chest of any degree, diminished expansion of the affected side, or any signs showing the lung tied to the thoracic wall by adhesions.

TUBERCULOUS CONDITIONS.

First. The old fibroid case, usually of poor physique, feeble respiratory murmur, and with or without râles. *Second*. Any subject showing the slightest suspicion of an active process. In many instances an active process is discovered in an otherwise robust man, and one is often

surprised when with the first breath there is revealed the harsh, or broncho-vesicular respiratory sound with a few fine râles. The more advanced cases can be easily recognized. *Third*. The arrested case. Inspection may or may not show a retracted apex; the respiratory sound may be from harsh to almost pure bronchial and unaccompanied by râles; the general condition may be good. Such individuals, however, have a latent infection and sooner or later, under the strain of actual service, an active process may start up. We are told that an accentuated second pulmonic sound is one of the diagnostic signs in these border-line cases. These cases are oftentimes difficult to classify. A decision can be reached only after the objective evidence has been carefully reviewed. It is here that past history, if reliable, would assist.

This work differs from clinical work in that there is not the same opportunity for continued observation and study. Deferred examinations and consultations should be the rule with draft boards, and thus the interests of both the Government and the individual would be better conserved.

To define just what constitutes tuberculosis is difficult, if not impossible. It is now believed that the infection is primary in the bronchial glands and thence extends to the lungs. Bronchial gland tuberculosis may exist without apparent auscultatory signs in the chest. If so, the subject is not likely to present the picture of vigorous manhood, and it is better for the interests of both country and individual to reject such cases on suspicion than to pass a man on to his doom from physical breakdown from the strain of war. No doubt there will be those rejected who should go and, on the other hand, some may be sent who should be retained. One hundred per cent. efficiency cannot be secured until the would-be soldier has had the advantage of at least six months to test his physical endurance.

THE HEART.

The normal heart can be judged in seconds of time, also those unfit for service because of valvular disease. When rapid heart action is found, if hyper-thyroidism, myocarditis, and disease of the lung can be eliminated, we conclude that the rapidity is due to psychic causes and therefore we may safely select the man for service. The slight systolic murmur often encountered with tachycardia is of no consequence. A definite accentuation of the pulmonic second sound or a short snappy first sound should always suggest mitral disease or some pulmonary lesion. A sharp accentuation of the aortic second sound suggests high blood pressure. While a high blood pressure is not always associated with an accentuated aortic second sound, blood pressure reading should always be taken in these cases in order to rule out a nephritis or the cardiovascular effects of syphilitic infection. A slight murmur associated with definite

enlargement or displaced apex and accentuation of second sounds means valvular disease and therefore a cause for rejection. A slight degree of mitral stenosis may give rise to a murmur so faint that it may be distinctly audible only after exercise or when recumbent.

Largely by its sound does the heart tell us whether or not it is able to perform properly its functions. Any defect in itself is revealed by an adventitious sound or murmur. But there are murmurs *and* murmurs. Let us consider them and see if we can distinguish between an important and an unimportant murmur. Are some murmurs organic and others functional or accidental? If so, how interpret them?

There is no standard upon which to base the diagnosis of functional murmur. The textbooks tell us that these murmurs are almost always systolic in time; they are usually heard in the second left interspace and at the apex; they are soft in character and variable in intensity, and are rarely transmitted; they are not associated with accentuation of the pulmonic second sound or with hypertrophy of the left ventricle. In Nothnagel's encyclopedia of practical medicine,* is the following: "It is true that hemic murmurs are usually very soft, but the same thing is occasionally observed in cases of true insufficiency. Systolic murmurs are heard quite often without obvious or even distinct signs of anemia and without any cause to justify the assumption of a functional valvular disturbance." Cabot† says: "They are especially apt to be associated with anemia, although the connection between anemia and functional heart murmurs is by no means as close as has often been supposed. The severest types of anemia, for example, pernicious anemia, may not be accompanied by any murmur, while, on the other hand, typical functional murmurs are often heard in patients where the blood is normal, and even in full health." Sir James Mackenzie‡ says: "As a young man I told people with heart murmurs that they were in a bad way; but they did not die, and I began to separate the murmurs—the innocent ones from those of importance. Some murmurs might mean anything, and the man might be in perfect health. He had seen a lad who had been rejected on account of heart murmurs. He found that he was the leading athlete of his school and that the following day he won a prize for running the longest race in record time. Men were continually being rejected for life insurance through heart murmurs. He gave a certificate to a man who had been rejected seven times. That man has now been in the fighting and is quite well." Far be it from me to doubt any statement of Mackenzie's in regard to the heart, but what one man with a heart murmur may have done in the fighting is not a safe criterion by which to judge hundreds or thousands of other men who may show similar murmurs.

Life insurance is a business proposition. The medical directors of the strongest and best com-

panies practically agree that it is impossible to differentiate between a functional and an organic heart murmur. One medical director states as follows: "The only sure differentiation is made by the subsequent history of the individual. If the murmur disappears permanently, then the presumption is that it was a functional murmur. As long as an applicant shows a murmur of any kind we do not consider it safe to accept him." These conclusions on the part of life insurance companies are based on statistics. Statistics are cold economic facts which are not subject to change as are medical opinions.

Galli,§ chief of the special medical service for soldiers with heart affections in the Italian Army, states that evidences of arteriosclerosis of the aorta and coronaries were found in 45% of 60 young soldiers supposedly entirely healthy when killed.

Parkinson¶ found that over 50% of 90 soldiers sent back from the front on account of cardiac insufficiency had signs of it before enrollment. In only five had the first symptoms developed after an acute infection. In 30% there was valvular trouble recognized before enrollment in all but three. He comments on the frequency of latent heart disease among civilians, the result of some infection early in life, saying that while it may remain latent indefinitely in civil life, it flares up under the stress of military service.

Mintz** says: "The heart, even with a well-compensated defect, responds differently to excitation (pulse rate, blood pressure) from the sound heart. If we consider the accentuation of the second pulmonary sound with overburdening of the heart an index of its functional capacity, then we must arrive at the conclusion that the reserve force of the heart, even with perfect compensation, is limited and small. Accepting this, it follows as a matter of course that men with even slight heart defects cannot be utilized for military service."

We have all seen patients showing a slight systolic murmur at apex or base, which we considered of no importance, and which we were unwilling to call either functional or organic, preferring rather to let time render the decision. For years some of these cases may not develop any signs of cardiac distress, while others develop well-marked valvular lesions, which in some instances, under strain—pregnancy, for example—reveal the classical signs of true valvular disease.

Therefore, while murmurs are found which may seem of slight importance, there are no definite standards by which they can be designated as functional. Consequently, in this particular work, it is safer to assume that these murmurs indicate a latent heart infection; that at some time in the past life of these individuals, slight structural changes causing a murmur have resulted from an inflammatory process of mild degree. I firmly believe that in this work of ex-

amining recruits, the spirit of fairness underlying the selective draft act is nullified in many cases by the consideration of this mythical, so-called functional murmur.

Our country is confronted with the task of rapidly raising an army large enough to be a force in this gigantic world-struggle. Such an army requires a degree of physical health much greater than for active work in civil life. Thus in its selection, physical examination becomes a matter of the greatest importance, because it is solving, on the one hand, a problem of preventive medicine and on the other an equally important one of economics. The man with tuberculosis may infect his fellows. In such an event the expense of their equipment, training, transportation and maintenance, as well as that of his, represents a useless outlay of the nation's resources, and in addition there must be considered the further expense of care, and of pensions for disability incurred in line of duty.

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A STUDY OF THE KIDNEY FUNCTION IN SENILITY.

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To quote a recent publication, "death follows on account of the insufficiency of the excretory process, therefore the limit of life is a matter of excretion," is to express a rather general notion which medical men have come to have. Old age is considered by many to be a chronic, incurable disease, associated in large part with, or caused by, a diminution of kidney function.

This study is an inquiry into the functional conditions of the kidneys in late life, designed in part as an assistance in the interpretation of post-mortem findings in cases coming to such a study. A group of 41 patients was studied, in which group the ages ranged from 70 to 88 years. None of the patients had shown any fever, dyspnoea, edema or other signs within a period which could in any way be considered as influencing the findings in this study. The hemoglobin of all the patients ranged between 75% and 100%. The blood cytology was essentially normal. A great majority of the patients studied were active, not only working about the wards, but most of them have been engaged in manual labor or in the industrial rooms. On the whole, the coöperation of the patients was

good indeed, despite the fact that every one was psychotic. It is true, however, that the more complicated tests, such as the two-hour test, could not be carried out.

The features that were studied in this group were the blood urea, expressed as blood urea nitrogen, blood pressure, phenolsulphonethalein test for renal function and the urinalysis. The blood urea nitrogen was determined by the Marshall urease method. The soy beans were ground, dried, powdered and sieved, giving a stable, easily handled enzyme. The aeration and titration method was used in determining the amount of urea nitrogen in the sample of blood used (5 cc.). In every case the blood was drawn in the morning before breakfast, twelve to fourteen hours after the preceding meal. This plan of obtaining the blood so long after the preceding meal fails, of course, in securing evidence of slight retardation in the excretion of urea, as might well be expected in these cases. But the plan does give values which are independent of the food intake and gives an idea of the constant level of blood urea characteristic of the individual. Blood taken on different days, and at considerable intervals on the same patient, has shown very close approximations of the urea nitrogen on these different occasions, as the appended tables show. The blood pressure readings were taken in the mid-afternoon by means of a mercury manometer. The values given are either the average of several readings, where the readings were fairly uniform, or several readings taken on different occasions, where the different readings have not been so close. The phenolsulphonethalein test of Rountree and Geraghty was used in the usual manner. It is worthy of note that the standard solutions used in this test should be made up frequently, as they fade even when carefully sealed. This applies in my experience only to the standards made up in the laboratory, not to the sealed standards of purchased colorimeters. The urinary examination was done in a routine manner; no special attempt was made to find casts, for instance. The two-hour test meal studies could not be carried out on these cases, nor could an investigation of the quantity of the day and night urine be conveniently made. However, it is a distinct impression, judging from the few cases in which the latter was studied, that there is in most cases an increase in the night volume. Tests, such as the elimination of lactose, potassium iodide, methylene blue, indigo-carmin, etc., were not applied nor was the action of diuretics investigated.

DISCUSSION OF THE RESULTS.

Using the blood urea nitrogen as a criterion, there was found evidence in this group of a mild degree of retention in a number of cases,—about 50%. Just what value of blood urea nitrogen is to be considered normal influences, of course, one's opinion whether there is or is not reten-

tion in a given case. In all the cases I have studied, the preceding meal can have little to do with the figure. During the course of over 100 blood urea determinations in other connections on younger individuals who were on the same hospital diet and routine, the blood being taken, as in this study, before breakfast, I found no value over 16 milligrams (in cases free from demonstrable kidney insufficiency) and only 3 over 15 milligrams per 100 cc. of blood. Two of these cases showing a value over 15 milligrams were on cases whose blood urea nitrogen had been done at least 15 times, so I have come to consider that under the conditions of diet, *etc.*, here, the upper value for normal blood urea nitrogen is about 15 milligrams. I realize this value is at variance with figures given by others, but under the conditions here, it is seldom that a blood urea nitrogen value of over 15 milligrams is found. The usual values range from 9 to 14 milligrams per 100 cc. of blood.

Turning to the blood pressure readings: of the 40 cases in which both systolic and diastolic readings were taken there were 21 cases which showed a systolic pressure of 160 mm. or over. There were 28 cases showing a diastolic reading of 85 mm. or over and 23 cases with a diastolic reading of 90 mm. or over. Of 19 cases showing a blood urea nitrogen of 16 mgm. per 100 cc. or over, 7 showed a systolic pressure of 160 mm. or over, whereas in this same group of 19 patients, there were 15 who had a diastolic blood pressure of 85+ mm. and 12 with a diastolic pressure of 90+ mm. If a diastolic reading of 85 to 90 mm. is considered as much a relative elevation of diastolic pressure as 160 mm. is an elevation of systolic pressure, then it is evident that a retention, judging from the blood urea nitrogen, is associated with an elevated diastolic pressure about twice as frequently as it is with an elevated systolic pressure. This is an observation made very frequently and one which has been given considerable emphasis. It is a correct observation, but in the cases studied here, including another larger series in which the elevated blood pressure was the criterion of selection, a low blood urea nitrogen is just as likely to be accompanied by a high diastolic blood pressure as is a high blood urea nitrogen. Nor can it be said that an elevated blood pressure—either systolic or diastolic—allows a prediction that the blood urea nitrogen is elevated, for only about 50% of the cases with a high blood pressure show a high urea nitrogen (see tables).

When the renal function is considered (*i.e.*, the phenolsulphonethalein output), there appears to be little, if any, relation between the rate of elimination of the dye and the value of the blood pressure. Fourteen of the nineteen cases showing a high blood urea nitrogen have an average rate of elimination within 5% of those cases showing a more normal value of blood urea nitrogen. When the renal function test values are examined, it is evident, espe-

cially with the lower percentages of excretion, that the low rates of excretion of the dye are associated for the most part with a high urea nitrogen. When, however, there is a poor elimination of phenolsulphonethalein, associated with a normal blood urea nitrogen, there is usually a high diastolic blood pressure. Here, again, one looks upon an elevated diastolic blood pressure as significant, but an examination of the diastolic blood pressure in cases with a good elimination of the dye shows that many of these cases, too, have a high diastolic reading.

On urinary examination there was found albumin in 10 cases (25%). This finding had little relationship to the other determinations. Casts were readily found in routine examination in a majority of the cases (a frequent observation but pointing, of course, to damaged kidneys). None of the cases showed glycosuria, although several of the cases did show a moderate hyperglycemia (not reported upon). There was little inability of the kidneys to pass a urine of reasonably high specific gravity on demand.

Five of the six cases of this series have been autopsied, several dying too early in the study for complete figures to be obtained. These five cases have shown, as usual, extensive arteriosclerosis and fibrosis of the liver, heart, spleen and other organs and gross evidences of chronic interstitial nephritis. Two of the cases showed very extensive destruction of the renal architecture. Since permission for post-mortem study can be obtained in the majority of the cases dying in the hospital, it is hoped that this ante-mortem inquiry may be of some assistance in later studies.

SUMMARY.

The present study was made on a group of 41 patients, whose ages ranged from 70 to 88 years. These patients were free from gross evidences of renal insufficiency or other compromising conditions (fever, edema, dyspnea, anemia of note, *etc.*) and most of them were active workers.

Under the conditions of diet and hospital routine here, the upper normal value of blood urea nitrogen is considered as 15 to 16 mgm. per 100 cc., the blood being drawn before breakfast, 12 to 14 hours after the preceding meal.

Fifty per cent. of the cases studied showed a moderate degree of retention, using the blood urea nitrogen figures as a criterion.

Fifty per cent. of the cases showed a systolic blood pressure of 160 mm. or over; a higher percentage showed a diastolic pressure of 85-90 mm. or over. The blood pressure readings cannot be said to be related to either the blood urea nitrogen or to the rate of elimination of phenolsulphonethalein.

In 27 cases in which the elimination of phenolsulphonethalein was determined, 13 showed a value of 40% or lower; 9 of these were 35% or lower. A low value of elimination of

| No. | AGE | BLOOD UREA | | BLOOD PRESSURE | URINE | | | | RENAL FUNCTION |
|------|-----|------------|---------|----------------|------------|------|------|------------------------------|----------------|
| | | NITROGEN | | | Spec Grav. | Alb. | Sug. | Blood | |
| | | | | | | | | Sediment | |
| 448 | 71 | 17.36 | 105-95 | 1010 | 0 | 0 | 0 | Rare hyal. cast | 55% |
| | | | 140-70 | | | | | | |
| 261 | 78 | 11.2 | 152-80 | 1014-22 | 0 | 0 | 0 | Hyal. and gran. casts | 35% (1916) |
| | | 12.3 | 140-80 | | | | | | uncoop. |
| 131 | 74 | 8.4 | 160-95 | 1012-18 | 0 | 0 | 0 | Rare hyal. cast | 50% |
| | | 9.2 | 140-85 | | | | | | |
| 319 | 77 | 12.12 | 180-90 | 1024 | 0 | 0 | 0 | Few cylindroids—no casts | 45% |
| | | 11.76 | 150-85 | | | | | | |
| 337 | 72 | 20.2 | 130-70 | 1020 | sl. tr. | 0 | 0 | Gran. casts | 15% |
| | | 18.2 | | | | | | | |
| 26 | 71 | 16.2 | 140-90 | 1010 | s.p.t. | 0 | 0 | Occ. hyal. cast | 40% |
| 467 | 79 | 18.5 | 128-80 | 1025 | 0 | 0 | 0 | Few gran. casts | 40% |
| 427 | 79 | 10.1 | 120-84 | 1025 | sl. tr. | 0 | 0 | Few gran. casts | incont. |
| | | 11.2 | | | | | | | |
| | | 15.1 | | | | | | | |
| 446 | 87 | 23.3 | 120-60 | 1024 | 0 | 0 | 0 | Pus, no casts | 15% |
| | | 29.9 | | | | | | | |
| 472 | 74 | 14.0 | 180-100 | 1020 | 0 | 0 | 0 | Occ. hyal. cast | 35% |
| | | 13.7 | 150-95 | | | | | | 35% (1916) |
| | | 14.6 | | | | | | | |
| 107 | 77 | 17.9 | 160-80 | 1013-22 | 0 | 0 | 0 | Rare hyal. cast | 55% |
| | | 15.7 | 168-95 | | | | | | 70% (1916) |
| 519 | 75 | 15.4 | 200-110 | 1004-28 | 0 | 0 | 0 | Occ. hyal. cast | 60% |
| | | 13.2 | 150-110 | | | | | | |
| 466 | 76 | 11.2 | 106-52 | 1020-30 | 0 | 0 | 0 | Gran. and hyal. casts | 60% |
| | | 15.9 | | | | | | | |
| *715 | 73 | 7.3 | 160 | 1020 | trace | 0 | 0 | Hyal. and gran. casts | |
| 313 | 73 | 10.6 | 185-105 | 1022 | 0 | 0 | 0 | Rare hyal. cast | 35% |
| | | 13.4 | 190-120 | | | | | | |
| 67 | 73 | ref. | 210-120 | 1016-30 | 0 | 0 | 0 | Few hyal. and gran. casts | uncoop. |
| 235 | 73 | 13.4 | 190-95 | 1010-14 | 0 | 0 | 0 | No casts | 55% |
| | | 15.1 | 180-90 | | | | | | |
| | | 9.24 | | | | | | | |
| 110 | 71 | 12.9 | 200-120 | 1020 | 0 | 0 | 0 | Few hyal. and gran. casts | 45% |
| | | 11.8 | | | | | | | |
| | | 13.4 | | | | | | | |
| *106 | 83 | 20.2 | 215-100 | 1020-24 | 0 | 0 | 0 | Occ. hyal. casts | 25% |
| *136 | 70 | 34.8 | 270-160 | 1010-22 | 0 | 0 | 0 | Many gran. and hyal. casts | 45% (1916) |
| 143 | 75 | 12.3 | 180-100 | 1011-20 | 0 | 0 | 0 | Rare hyal. cast | disch. |
| 509 | 87 | 8.7 | 240-90 | 1016-18 | 0 | 0 | 0 | Few gran. casts | 65% |
| | | | 180-95 | | | | | | |
| 432 | 70 | 21.8 | 230-100 | 1018 | 0 | 0 | 0 | No casts | disch. |
| | | 16.9 | | | | | | | |
| 240 | 88 | 16.8 | 200-140 | 1008-22 | 0 | 0 | 0 | Occ. gran. and hyal. casts | uncoop. |
| | | 16.8 | 180-115 | | | | | | |
| 341 | 73 | uncoop. | 130-90 | 1014 | s.p.t. | 0 | 0 | Occ. hyal. cast | uncoop. |
| 437 | 78 | 14.0 | 145-82 | 1022 | trace | 0 | 0 | Numer. hyal. and gran. casts | 30% |
| 407 | 71 | 21.8 | 118-80 | 1020 | 0 | 0 | 0 | Many hyal. and gran. casts | 60% |
| | | 19.0 | 130-90 | | | | | | |
| | | 17.4 | | | | | | | |
| 242 | 70 | 16.5 | 150-90 | 1006-12 | 0 | 0 | 0 | Gran. casts | 30% |
| | | | 170-115 | | | | | | |
| *859 | 86 | ... | 180-78 | 1020 | sl. tr. | 0 | 0 | No casts | |
| 408 | 76 | 11.7 | 165-75 | 1004-20 | 0 | 0 | 0 | Hyal. and gran. casts | 35% |
| 284 | 74 | 20.7 | 160-100 | 1005-30 | 0 | 0 | 0 | Gran. casts | 55% |
| | | | 130-75 | | | | | | |
| 40 | 73 | 15.4 | 130-70 | 1022 | s.p.t. | 0 | 0 | No casts | uncoop. |
| | | 15.96 | | | | | | | |
| 776 | 71 | 23.0 | 150-95 | 1012-20 | 0 | 0 | 0 | Few gran. casts | 30% |
| | | 23.5 | | | | | | | |
| 41 | 77 | 16.24 | 180-100 | 1014 | 0 | 0 | 0 | Rare hyal. cast | uncoop. |
| | | | 150-70 | | | | | | |
| 334 | 70 | 22.4 | 166-88 | 1012-24 | s.p.t. | 0 | 0 | Hyal. and gran. casts | 60% |
| | | 15.4 | 135-75 | | | | | | |
| 404 | 70 | 16.0 | 140-100 | 1016 | 0 | 0 | 0 | Rare hyal. casts | 50% |
| | | 15.4 | 160-90 | | | | | | |
| *469 | 82 | ... | 140-75 | 1020-25 | 0 | 0 | 0 | No casts | |
| 764 | 81 | 15.1 | 190-90 | 1018-20 | sl. tr. | 0 | 0 | Occ. hyal. cast and pus | uncoop. |
| | | 15.4 | 240-130 | | | | | | |
| | | 20.3 | | | | | | | |
| *277 | 70 | 16.3 | 180-120 | 1015-21 | 0 | 0 | 0 | Hyal. and gran. casts | |
| | | | 200-90 | | | | | | |
| 853 | 76 | 17.6 | 170-80 | 1035-18 | 0 | 0 | 0 | Few gran. casts | 40% |
| | | 17.6 | | | | | | | |
| 278 | 70 | 12.8 | 195-100 | 1012-22 | 0 | 0 | 0 | Few hyal. casts | 40% |
| | | | 170-85 | | | | | | |

* Died; autopsies have been done on Nos. 715, 106, 136, 469 and 277.

the dye is associated for the most part with an elevated blood urea nitrogen. A good excretion is related for the most part with a relatively low blood urea nitrogen.

Twenty-five per cent. of the cases showed albumin in the urine. There were no cases of glycosuria or hematuria. Practically all of the cases showed casts—a customary observation.

Sixty-six per cent. of the cases showed either an elevated blood urea nitrogen or a depressed value of phenolsulphonephthalein elimination (40% or lower). If one disregards the findings of only a few casts in the urine and disregards the blood pressure also, it can be said that, in the group of patients studied, about 70-75% show easily demonstrable evidences of kidney insufficiency.

It will be noted that in this group there are several cases showing a relatively low blood urea nitrogen and a good renal function, but which have a considerable elevation of blood pressure, the so-called cases of "essential" hypertension.

Clinical Department.

A PSYCHOPATHIC CONSTITUTION RESEMBLING SO-CALLED MORAL INSANITY, AND ITS INTERPRETATION.

By J. VICTOR HABERMAN, A.B., M.D., S.M.D. (BERLIN).
NEW YORK CITY.

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AN exceptionally interesting boy was sent to me for examination and diagnosis in June, and his case again placed before me the month after, his conduct bringing him into the Childrer's Court.* As this is a type of child so frequently mislabeled "feeble-minded," and even more often "degenerate," "moral imbecile," or "moral delinquent," and yet in reality is none of these, but just a "psychopathic constitution," I feel that the report of the case and its psycho-clinical interpretation might prove instructive.†

Master John X. is 10 years and 6 months old, born in America of foreign parents, the latter apparently of fairly good stock. The father was a sailor, his own people sound and considered bright (all having obtained positions rather over the average). The mother, who brought the boy, is an intelligent woman, giving no sign of nervousness or psychopathy. Her account may be summarized as follows:

* This child, in the charge of Miss Gregory of the Public Education Association, was referred to me by Prof. Heckman, of the Dept. of Pedagogy, C. C. N. Y. The case came up before Justice Levy of the Children's Court in July, for which trial this report was prepared.

† For a full study of the Degenerate, Born Delinquency, etc., see the author's paper on this subject in "The Archives of Diagnosis," New York, April, 1917.

The boy's heredity, she believes, is entirely negative (the only abnormality noted is the father's being ambidextrous). Her own fraternity and that of her husband and their children (the patient's cousins) are all normal. She herself has two other living children that are healthy, and had one still-born in the 6-7th month. No miscarriages.

The patient was born prematurely (in the 7th month), weighing but 3½ pounds, and showed a nasal deformity (thought at the time to be possibly an abnormality of the septum or cartilages). Everything else negative. The child picked up rapidly and walked, talked and teething at the normal time. He never had a high temperature nor a convulsion. An operation was done on the nose at the age of four to clear the obstruction and, if possible, find out the cause of the trouble (a tumor was suspected, but none found). The wound healed very slowly. There were two or three later operations on the nose.

The present complaints (given by the mother) are serious and rather unusual: The boy frequently loses grip on himself. For days at a time acts as under a drug; seems dazed. Fancies everyone is against him, especially the boys at his school. Has a "terrible" temper. Getting worse. When excited, jumbles his words. Has attacks of rage. If he does not get what he wishes, goes into spasms in which he fumes, gets blue, tears and breaks things. Tore a large mass of hair out of his sister's head on one occasion. Once cut somebody's wrist with a large knife while in such a tantrum. Lies "dreadfully." Says he tries to stop it but cannot. Steals money and things. Appears to have no memory. Can recall nothing. Has two sisters and has difficulty in remembering their names; frequently gets the names confused. (No doubt due to dissociation and disersive attention. Memory tests proved negative.) Cannot concentrate at all; a fly, for instance, will distract him and keep him from playing, studying or working. Is very restless in his sleep, throws himself about, constantly grinds his teeth. In school evidences strong crethism, talks much, constantly asks questions, moves about the room. Accomplishes nothing. Strongly constipated.

Additional Facts.

Never keeps a promise.

This morning he took a picture not belonging to him. Swore he hadn't it. Said to his mother, "Mother, I'd be put into hell, the Lord would not have me in Heaven if I took it." And yet later the mother found the picture on him. He knew that it was wrong.

He also tried to get his sister to take things. Once, when 8½ years old, made his sister take something, saying he'd kill her if she didn't.

Likes to play with fire. Twice set the house on fire (the last time three years ago). Just wanted to see the flames. His mother, to cure him, burned his finger with a match. This seemed to help some, but still likes to play with matches.

If left alone will go through drawers, meddle with the clock, the hot irons, etc.

Has run away three times; last time two years ago. Took subway to end of road and then walked a long distance. An officer found him and brought him to the station. There he said he would not go home; that he was badly mistreated, etc. On my questioning him why he did this, he answered that

his teacher said if he did not come back the next day with clean covers and clean book, she'd hit him. "So I ran away and told the story to the police to get farther away—I expected to go far, far away." Later added, "How could I have clean covers and book if they were dirty?"

Is pathologically lazy. Will not undress himself at night; rather goes to bed with his clothes on. Will frequently rather soil himself than go to the toilet, it being too troublesome to undo his clothes. If given toys to play with, as "Mechano Set," asks, "Must I do this?" Everything is an effort.

Two months ago was in the cellar and said there was a big black shadow following him—even pointed it out to his mother in the bedroom, where it was in front of him; described it as standing still when he moved. Persisted in this for several days. Wanted to investigate it and got angry that none of the others could see it. Later said it left—wasn't there any more.

Further Incidentals of Psychopathy.

Nocturnal enuresis up to a year ago, constant; now once in a while. Headaches occasionally severe (not of migraine type). Is fearful of the dark and of being alone at night. Once, recently, strongly suspected of sleepwalking. Is supposed to have prowled around his father's shop. There was considerable evidence of this, but the boy denied any knowledge of same.

Etiology.

The heredity appears to be negative. The husband, however, was a sailor (up to the breaking out of war), and it is possible that he took up this vocation because of a trend to instability or a roving disposition. This is frequently but by no means always the case. Hence the possibility of the father's having been psychopathic.

The prematurity in the seventh month, weighing 3½ pounds, points to the more probable reason for the brain abnormality. The brain, if undeveloped at time of birth but uninjured, usually develops to the normal after birth—if the deficit is not too great; here the underweight denotes the severity of the condition, and the fact that the head at present is from one-half to three-quarters of a centimeter smaller than it should be (intimating that the brain has not grown to normal size). But this is not all. There must have been a reason for this prematurity and underdevelopment. This surmise is substantiated in the deformity of the nose at birth. There was no point to the nose and the nostril was obstructed on one side; it was thought that the cartilage must be pressed inwardly, or later (age of 4) that a tumor was present. Hence the subsequent operations. (The above facts bring up the possibility of congenital syphilis.)

The nasal obstruction itself may have played a baneful part in the general mental development (restricted aeration, etc., but especially in affecting the attention), also the operations themselves, the wound healing with difficulty. (Aprosexia nasalis.)

At the age of 2 the child fell down stairs. Though not unconscious, he lay quiet for a long time; appeared dazed for several weeks afterward. His mother states that he now seemed to unlearn much that he had learned and had to be re-taught. Up to this period she thought him normal, bright and sweet-tempered. After the fall he changed, seemed backward, developed an intense temper in which he would throw himself on the

floor, kick, scream and get blue. At times he was almost frantic, "as if out of his mind."

At about this same time the mother had to leave the home in order to nurse her husband, ill at the hospital. In the interim, three months, the child was in the care of an inferior nurse who taught him to masturbate and whose influence was generally bad. The masturbation continued up to the age of four.

Pedagogic History.

The boy has been in several schools (five in all) and in sixteen different classes since entering kindergarten (6, 19, 12.) He thinks mostly in German (the language spoken in his home) and translates to English as he speaks. This is constantly noticed. It is also very evident in his writing, which is extremely poor. One also readily sees that the boy thinks best and quickest in German.

Home Environment.

Very moderate circumstances but rather good surroundings. Mother appears firm and intelligent.

Examination.

Visceral and neurological examination negative, save that coördination of the movements of the left upper extremity is not as good as it should be (especially finger-to-nose test).

General development good. Appearance negative save for the nose which appears somewhat "pressed in." Head girth is slightly below normal—51 centimeters. Palate is abnormally high and somewhat narrow. Teeth are poor, the lower row unevenly planted. (Has abnormal folds at the tonsillar end of the gums?) Enlarged postcervical glands on the right.

Spine shows slight scoliosis (and some abnormality between scapulae?) X-ray negative.

The nasal deformity, high palate and poorly planted teeth are possibly to be looked upon as *stigmata* of hereditary taint.

There is no evidence of endocrinopathy.

There is no evidence of vagal or sympathetic involvement.

Several things suggest syphilis and hence this must not be ruled out: the prematurity, low weight at birth and dysplasia (nose), and the mother having had a still born child in the 6-7 month.

Intelligence.

According to the examination made by both Prof. Heckman and myself, the general average of intelligence is up to the proper mark. As to ethical and moral understanding and feeling, my own tests prove the boy to be quite normal. His answers to my questions were bright and sharp and evidenced real feeling. In fact, asked to tell what good deeds he had already done, his accounts, whether truthful or not, show him to have a better understanding of the hardships of poor people and feeling for this than many a normal child of his age.

His attention is dispersive; concentration very poor.

Diagnosis.

We have in this boy a brain very probably hereditarily invalidated—no doubt, the primary factor. Added to this (and possibly of equal etiological moment?) is the prematurity and, because of the extreme underdevelopment at birth, 3½ lbs., a post-natal development that finally fell short of the full

unfolding (incomplete myelogenization, or smallness of cells, or fewer association fibres?) evidenced by the skull (brain) being slightly smaller than normal; possibly, also, by the high, narrow palate.

The fact, however, that this child walked, talked, and teathed at the proper time makes it possible to assume that the brain here *did* reach its full and proper maturity, in spite of the small skull girth, and that the hereditary taint alone must be considered in the above. What this taint was, whether psychopathy, incompatibility of the germ plasma (Moebius), or syphilis, cannot absolutely be said.[‡]

This already invalidated brain, and therefore less resistant than the normal, is now still further unbalanced by a series of conditions and traumata, namely, nasal obstruction, three or four nasal operations, an unhealing nasal wound (this must have been a very severe drain on the child's attention), a serious fall downstairs (concussion?) a two years' period of masturbation (which may harm a delicate brain organization, but, on the other hand again, may not be of much moment), and evidently an interim of poor or perverted influence in the hands of an inferior nurse—and the lack of parental control during this period—and, finally, an unfortunate pedagogical training with many changes of schools and classes and the boy learning to *think* in German.

Consequent upon all this, we have a *mental abnormality* showing itself here not in a lack of abnormality of intelligence, but in functional deviation in the sphere of emotion, affectivity and will (namely of the character and personality constituents), i.e., *psychopathy*. This boy, then, is a psychopathic constitution and of the affective type ("affective psychopathic constitution").§

Dissociations and occasional hallucinations, as this boy shows, are not infrequent in these individuals. They sometimes also have "large" epileptic attacks—the "affect epilepsy" of Bratz (which our patient however is not subject to).

The unethical tendencies are to be accounted for through psychopathy, that is, little or no inhibition, in this case, of impellants along the lines of least resistance. Such minds react to every wish, whim or suggestion—whether it be right or wrong—and react the more easily under emotion or affect (deeds of violence being even possible in the daze of strong affectivity). This boy thoroughly comprehends the difference between right and wrong and has good general ethical insight and even evidences real, deep feeling. But he has no will with which to act counter to his inclinations and desires. He covers his tracks through lying—lying having become common habit with him. A lively fantasy only adds

to the mischief. There is no defect here of any "ethical sense," nor "ethical inferiority," because of mental enfeeblement, nor is this a case of ethical warp through lack of home training, seduction, etc.

The strongly abnormal laziness is an unusual accompaniment and difficult to explain unless it be again a manifestation of lack of will to do ought necessitating effort and not in the line of inclination or desire.

Prognosis.

The case must be looked upon as a serious one, and one in which both special training, treatment and the closest supervision will be needful for a long period of time. Under these conditions, there is a likelihood of the boy evening out into normality. Should this child grow up without such special training, treatment and supervision, his natural course will be the most direct pathway to criminality.

But how dispose of such cases? The institutions for the feeble-minded are not the place for them, for they are not feeble-minded, and would not only benefit in no wise from such a sojourn, but would surely corrupt and contaminate every witless member of the community. Nor is reformatory or prison the place to send them, for though they have perfect knowledge of right and wrong, they are, nevertheless, quite irresponsible for their acts and hence not deserving of punishment; nor does punishment help such psychopaths in the slightest; indeed, it rather breeds resentment in them, fosters desperate moods, and intensifies their already abnormal affectivity. And as for sending them to the asylum, that is, least of all, a fit commitment, for they are not insane, have not even partial trends to alienation, and must needs degenerate and decay in so abnormal an environment.

Through the Children's Court and the benevolence and fine insight of its judges, many such unfortunates are spotted and sent to industrial school farms, and in that way are very well, though not ideally, looked after. But the greatest number do not come before the children's courts and are not individually cared for until they are adults and have grown so mentally awry as to be beyond the stage of educational correction. Both through tax burdens in supporting its overcrowded derelict cantonnments and in the actual loss and suffering occasioned by these psychopaths, society pays dearly for its sin in not sifting out its abnormal in their childhood days, when they could still be succeeded,* and establishing suitable institutions for their temporary maintenance and special training. This for all of us—physician, teacher, justice and citizen—is a most timely problem and a serious and urgent one.

‡ Even if this boy gives no W. R., his abnormality might be occasioned by syphilis in his ascendants, he himself not being syphilitic. "Thus many a juvenile malefactor has to thank his miserable state to the unstable nervous system bequeathed him by the syphilis of an ancestor." See our study on Hereditary Syphilis, Jour. A. M. A., March 3, 1915, p. 1141. As yet it has not been possible to obtain a W.R. on either the boy or his parents.

§ Should this boy give a positive Wassermann reaction, the diagnosis will be no different, only we shall be informed as to the cause behind the trouble. Antisyphilitic treatment in that case will, of course, be imperative.

* How this can be done in the schools was suggested by the writer some years ago—"Clinical Perchology in its Relation to the School and to Social Medicine," Med. Record, Nov. 20, 1915.

Book Reviews.

Radium Therapy in Cancer. By HENRY H. JANEWAY, M.D., with the discussion of Treatment of Cancer of the Bladder and Prostate by BENJAMIN S. BARRINGER, M.D.; and an Introduction upon the Physics of Radium by GIOACCHINO FAILLA, E.E., A.M. New York: Paul B. Hoeber. 1917.

This volume represents the first report of the use of radium therapy at the Memorial Hospital, New York. The author states that while there are many available reports of the use of radium in cancer, a more accurate description of the methods of applying radium to malignant tumors in different situations is needed in order that good results may be duplicated. In his experience the use of radium emanation has greatly increased the efficiency of radium therapy as compared to the use of the metal itself. For a satisfactory understanding of these advantages, as well as the principles of application and filtration, an acquaintance with the physics of radium is indispensable. It has, therefore, been deemed advisable to include in this report an introduction explaining in detail the physical considerations relative to the therapeutic application of radium. The book is well illustrated by eighteen half-tones and diagrams, and is extremely interesting from a clinical point of view.

Diseases of the Chest and Principles of Physical Diagnosis. By GEORGE WILLIAM NORRIS, A.B., M.D., and HENRY R. M. LANDIS, A.B., M.D. New York: W. B. Saunders Company. 1917.

This book consists of a volume of nearly 800 pages attractively bound, with excellent type and illustrations. The reviewer has nothing but commendation for this book. The numerous illustrations alone make it of very great value. It presents the subjects of pulmonary and cardiac functions from the only logical point of view, the pathological side first, and with this as a basis takes up the clinical aspects of diseases of the heart and lungs. The numerous plates of frozen sections showing the pathological anatomy of the various conditions under discussion, demonstrate more clearly than could be done in any other way, the causes for the various signs and symptoms associated with diseases of these organs. The reasons for the so-called "physiological right apex," for instance, are made clear and distinct, and the causes of the various murmurs in valvular disease of the heart are demonstrated by actual photographs of the diseased valves and by diagrams.

The amount of information given in this volume is enormous, and yet it is divided and sub-divided, so that any student or practitioner

can easily find the details concerning the particular subject in which he is interested. It is difficult to imagine how the presentation of this important and difficult subject, Diseases of the Chest, could possibly have been improved upon, and the writers are to be congratulated upon what the reviewer considers a notable achievement. This book may be highly recommended to students, general practitioners and specialists alike.

Manual for Institution Libraries. Compiled by CARRIE E. SCOTT. Chicago: American Library Association Publishing Board.

This monograph, published as Handbook No. 10 of the American Library Association Committee on library work in hospitals and in charitable and correctional institutions, is intended for the instruction of institution librarians without previous library training on the selection, arrangement, cataloging, distribution and preservation of books.

These questions are discussed under the headings: Book Selection (including titles of reliable book lists, paragraphs on book funds, editions, suitability, the proportion of fiction and non-fiction); furniture and fittings; mending and binding; the care and distribution of periodicals; classification, cataloging and loan system, with illustrations of sample book and request cards. Appended is a list of supplies needed in the library with addresses of reliable firms.

Altogether, it is a very complete and satisfactory little handbook, combining, as it does, in practical detail, the experience of all these hospitals and other institutions of the country, which have coöperated with the compilers by answering questions regarding methods and results in their own libraries.

To the untrained hospital librarian (and there are few others) such a handbook is indispensable. Happily, the hospitals are waking up to the importance of a good library as a therapeutic agent, and are learning that, to be efficient, this library must be organized; that without some system the best library is simply a mass of books, while with it, it becomes an important department of the hospital. It is because of a sympathetic realization of the difficulties of the untrained librarian that this Manual has been compiled.

United States Naval Medical Bulletin, January, 1918. Washington, D. C.

This bulletin, published for the information of the medical department of the service, issues an especially noteworthy number for January. An appreciation of Theodor Kocher by one of his pupils, Dr. Arnold C. Klebs, of Washington, D.C., appears in the historical department, and a picture of Theodor Kocher begins the volume. Among the special articles is one by Gaston Houzel Médecin Aide Major 1^{re} Classe, French Army, on "Treatment of Fractures of the Thigh

by the Gassette Apparatus;" another by Assistant Surgeon E. R. Noyes, U.S.N., on the preparation of Dakin solution, and an article by Surgeon W. N. McDonell, U.S.N., on Dakin's Solution and the Carrel Technique for Infected Wounds. The department of progress is especially interesting with its reports on military medicine.

The New System of Gynecology. Edited by THOMAS WATTS EDEN, M.D., F.R.C.S.E., F.R.C.S., Temp. Major, R.A.M.C., Vice-President of Section of Obstetrics and Gynecology of Royal Society of Medicine; Obstetric Physician, Charing Cross Hospital; Surgeon, Chelsea Hospital for Women; and CUTHBERT LOCKYER, M.D., B.S., F.R.C.S., F.R.C.P., Vice-President of Section of Obstetrics and Gynecology of Royal Society of Medicine; Obstetric Physician to Out-patients, Charing Cross Hospital; Surgeon to In-patients, Samaritan Free Hospital for Women. In three volumes. With numerous illustrations in color, and in black and white. Limited. London: MacMillan & Company. 1917.

This work represents the most ambitious effort in gynecological literature in the English language, and immediately attracts attention. Its scope and the array of contributing editors, under editors-in-chief Thomas W. Eden and Cuthbert Lockyer, arouse hopes of a production worthy of the contributions to Gynecology by British investigators and authors.

In volume I, a number of general topics are treated: anatomy, physiology, malformations, disorders of function, methods of examination of gynecological patients, types of micro-organisms found in the female genito-urinary tract, and infections, sepsis, gonorrhea, tuberculosis, syphilis. There are also chapters on inflammatory affections of the fallopian tubes, and ectopic gestation.

In volume II, diseases of the genital organs are taken up,—of the vulva, vagina, uterus, cysts and tumors of the fallopian tubes, and tumors of the ovary.

In volume III, are considered diseases of the breast, vermiform appendix, infections of the urinary tract, as well as methods of examination of the urethra and bladder, hernia in women, and diseases of the rectum. About three-fourths of the third volume is devoted to therapeutics, chiefly operative, with separate chapters devoted to general gynecological therapeutics, to the x-ray and to radium in gynecological practice.

In a work of this extent, three volumes, fifty authors and over twenty-five hundred pages, there is naturally some repetition or overlapping of topics, some disagreement and some unevenness in merit of presentation. Not all the

views are based on the most recent and thorough investigations. But the standards maintained are unusually high and the work has been produced under trying conditions and deserves high praise. Only six of the authors are from outside the British Isles.

Among the articles which it is especial pleasure to read are Disorders of Function by Blair Bell; Myoma and Adenomyoma of the Uterus, a masterly presentation by Cuthbert Lockyer; Cancer of the Uterus by Wilson, and Chorion-epithelioma by Teacher.

The arrangement of the work is not altogether satisfactory and numerous slight changes would be desirable. There are references to some of the most important articles in the literature, and each volume has an adequate index.

The press work is excellent, the illustrations very numerous and the colored plates of considerable, some of great, merit.

In spite of many excellences in the work, the reviewer closes the last volume with a feeling of disappointment because the book does not fulfill the promise of its title, a System of Gynecology. It is comprehensive enough, but not sufficiently systematic nor exhaustive. Each chapter should be a systematic and exhaustive consideration of the subject of that chapter, quite up to date, with a just and discriminating statement of varying views, if there is not unanimity of opinion among authorities, with references to the original articles where these views are expressed. Certain chapters do fully meet these requirements. But too often the text suggests inflation of the usual textbook in Gynecology instead of revealing the insight and the touch of the master.

Clinical Surgical Diagnosis for Students and Practitioners. By F. DE QUERVAIN, Professor of Surgery and Director of the Surgical Clinic at the University of Basle. With 604 illustrations and 5 plates. Second English edition. Translated from the fifth edition by J. SNOWMAN, M.D. New York: William Wood & Company. 1917.

This second English edition of 800 pages, and well printed, translated from the fifth edition by de Quervain, contains all that was so justly praised in the previous review of the previous edition, together with nearly 100 new illustrations, revision of all chapters, rewriting of the chapter on Stomach and Duodenum, and the addition of a final chapter devoted exclusively to Diagnostic Problems in Connection with the Military Surgery of the Limbs.

The reviewer considers this book the best single volume on clinical diagnosis with which he is familiar, and can recommend it without reserve to advanced students and practising surgeons.

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MOBILIZING THE PROFESSION FOR WAR.

UNTIL the entire medical profession of the United States, or at least those who are mentally and physically fit and within the age limit, is mobilized within the Medical Reserve Corps of the United States Army, not until then can we give to the Surgeon-General that efficiency which he so badly needs in having a large body of medical officers upon whom to draw.

You may never be called; at the same time your joining the Medical Reserve Corps and placing your services at the command of your country, clearly indicates the patriotism which the medical profession, as a whole, should evince and which we must manifest if we are to win the war.

Every doctor must realize that success depends upon a carefully selected and thoroughly trained body of medical officers. By careful selection, we mean the placing of a medical

officer in a position where he is best fitted for the service; and only by having an immense corps or the entire profession mobilized upon a war basis, can we serve our country to the best possible advantage.

This mobilization of the entire profession should come from within the body itself, but every physician coming within the requirements of the service, as to age and physical fitness, should seriously consider this suggestion, and not wait for complete mobilization, but apply at once for a commission in the Medical Reserve Corps of the United States Army.

It is not only for the combatant forces that medical officers are required, but for sanitation, hospital camps, cantonments, and in other departments where the health and life of the forces are dependent upon the medical officer.

We have within the profession a sufficient number of doctors to meet fully the requirements of the Surgeon-General's office, whatever they might be; but to be of service, you must join the Medical Reserve Corps to enable you to meet the appeal which is now being made for a large and efficient Medical Reserve Corps, upon which the Surgeon-General may draw as requirements demand.

THE NEEDS OF THE MEDICAL SERVICE.

UNDER the above caption, Lieut.-Col. R. E. Noble, M. C., U.S.A., presented before the latest meeting of the Southern Medical Association an admirable paper which convincingly answers the many questions asked of the Department, which have caused perplexing hours of thought with many doctors. This communication appears in full in the December issue of the *Southern Medical Journal*, and should be read by every doctor in the country. In a previous paper by the same writer, presented prior to the time that the United States entered the war, as in the above-mentioned communication, Col. Noble said:

"On the medical profession rests a heavy responsibility, for with the medical profession rests the subject of medical preparedness."

This is a particularly impressive paragraph and pregnant with truth, and its meaning should sink deep into the heart of every doctor in America. What was a fact before we entered the struggle is more than a fact now, since we

have joined forces with our Allies in a world war, which will be terminated only by the success of our arms.

We have not a sufficient number of medical officers to care for the combatant and other forces now in training. With the new draft soon to be called, and the possibility of the raising of an army of between five and ten million, as has been authoritatively foreshadowed, we would repeat, "On the medical profession rests a heavy responsibility, for with the medical profession rests the subject of medical preparedness."

The responsibility of the medical profession of the United States, and its importance in the successful outcome of the war, cannot be too forcibly impressed upon every doctor who is mentally and physically fit and within the age limit. They are urged to offer their services now.

That the Surgeon-General should have an immense corps of Medical Reserve Officers upon which to draw, enabling him to place the individual where he will be best fitted for the service, is manifestly apparent. This will mean efficiency, and by efficiency alone can the responsibility now resting upon the medical profession of this country be lessened.

Let every physician apply immediately for a commission in the Medical Reserve Corps and thus discharge the responsibility which he owes to his country, his profession and himself.

WAR-RISK INSURANCE.

In conjunction with our previous editorials on the subject of war-risk insurance, comes a letter from the Treasury Department of the United States, in Washington, urging the desirability for all men in this service, for the protection of their families, to carry war-risk insurance. The letter says in part:

"To safeguard America's gallant soldiers and sailors and their families, it is imperative that our fighting forces avail themselves of the full privileges conferred by the Military and Naval Insurance Act.

For his own benefit and for the benefit of his family, every enlisted man and officer in the Army and Navy should take the full \$10,000 of insurance. Insurance of almost \$4,000,000,000 has already been applied for, but this great total is only a beginning. America's Army and Navy should be 100% insured.

The necessity of prompt application cannot be emphasized too strongly. Persons in service before October 15, 1917, must apply on or before February 12, 1918. Those who joined after October 15, 1917, have 120 days from the date of enlistment in which to apply.

With the details of this insurance plan you are already familiar. The unprecedented advantages and privileges conferred by the Government and the extraordinarily low cost have been explained to all men now in the service. All that is needed now is vigorous publicity to speed up applications before February 12. In this work your aid is indispensable."

MEDICAL NOTES.

BRITISH NEW YEAR HONORS.—The list of honors bestowed on New Year's Day of this year may be looked upon as a war honor roll. Among those honored with the order of Knighthood are: Sir C. A. Ballance, Sir G. L. Cheate, Sir T. Crisp English, Sir Archibald Garrod, Sir J. M. Irwin, Sir W. G. Macpherson, Sir J. Maher, Sir W. H. Norman, Sir M. W. Russell, and Sir J. P. Stewart. The following list also contains the names of those who have served their country at home or in the colonies, and of members of the navy and army medical departments who have directly contributed to successes in the field. In the list of new Knights are the names of Dr. Barclay Josiah Baron, Lord Mayor of Bristol, consulting physician to the throat and nose department of the Bristol General Hospital; Dr. Thomas J. Horder, assistant physician to St. Bartholomew's Hospital and physician to the Cancer Hospital, in whose hands clinical pathology has made some valuable advances; Dr. John Phillips, professor emeritus of obstetric medicine in King's College; Mr. Harold J. Stiles, surgeon to the Edinburgh Hospital for Sick Children and to the Chalmers Hospital, Edinburgh; and Major Andrew Macphail, C.A.M.C., professor of the history of medicine in the McGill University, Montreal. Sir George Newman, principal medical officer to the Board of Education, has been made a K.C.B. In the Royal Victorian Order, Sir Bertrand E. Dawson, K.C.V.O., C.B., has been promoted to a Knight Grand Cross; Lieutenant-Colonel H. M. Rigby, R.A.M.C., has been made a K.C.V.O.; and Staff-Surgeon Louis Greig, R.N., a Member of the Order. In the Order of the Indian Empire, Lieutenant-Colonel and Brevet-Colonel H. F. Cleveland, V.H.S., Deputy Director-General of the Indian Medical Service; Lieutenant-Colonel H. Smith, I.M.S., Civil Surgeon at Amritsar; Major H. C. Brown, I.M.S., Director of the Central Research Institute at Kasauli; and Assistant Surgeon Kedar Nath Das, professor of midwifery at the Campbell

Medical School, Calcutta, have each received a Companionship.

CONFIRMATION OF CALIFORNIA MEDICAL LICENSE ACT.—The United States Supreme Court has declared constitutional the California state medical practice act, providing for licensing and regulating persons engaged in healing the sick.

BRITISH OPHTHALMOLOGICAL SOCIETY.—The annual congress of the Ophthalmological Society of the United Kingdom will be held on May 2, 3, and 4, 1918, in London, England. A museum will be held at the Royal Society of Medicine, with a special exhibition of perimeters.

LONDON DEATH RATES.—Mortality rates for the cities and boroughs of London for the month of November show that the lowest rate occurred in Hampstead, and the highest in Shore-ditch, the respective rates being 8.5 and 25.2.

SPANISH MEDICAL SOCIETY IN NEW YORK.—An association of Spanish-speaking doctors practising in New York has been formed and named *La Sociedad Medica Hispania-Americana*. The secretaries are Drs. Manuel Uribe y Troncoso and Anibal Zelaya.

LONGEVITY IN AUSTRALIA.—The *British Medical Journal* contributes a statement of some interesting longevity statistics from Australia.

"At the census of 1881, children under the age of 15 represented 38.9% of the total population of the Commonwealth, the proportion for subsequent censuses being 36.9 in 1891, 35.1 in 1901, and 31.6 in 1911. At the census of 1881, persons aged 70 and upwards represented 1.3% of the population, 1.5% in 1891, 2.1% in 1901, and 2.6% in 1911. These figures afforded evidence of the increasing age of the population of Australia. The influence of the South African war in 1901 on the age statistics was shown by the fact that, while males between the ages of 20 and 30 represented 20.5% of the total male population in 1891, and 18.7% in 1911, they represented only 17.3% in 1901. The high proportion at this age in 1891 is attributed to the large amount of immigration which took place during the preceding ten years."

AMERICAN SOCIETY FOR THE CONTROL OF CANCER.—The American Society for the Control of Cancer issues once a month a bulletin called "Campaign Notes," chronicling the progress of its work. The first number appeared in January, 1918. The Society considers one of the greatest achievements of the past year has been the publication by the Census Bureau of the special report on cancer mortality in the United States Registration Area. The preparation of this report was suggested by the Society, and its statistical experts were frequently consulted in its development.

"As it is unquestionably the most complete and detailed compilation of cancer mortality statistics ever published by any government, the Society feels a just pride in its publication. The report has proved of inestimable value as a source of reference for the members of our lecture staff who have secured copies by application to the Census Bureau in the name of the Society.

The collection of reports of cancer cases submitted by surgeons in the statistical study undertaken by the Society has been continued, and there is now on file at the National Office a very valuable amount of data which, when further augmented, will serve as the basis of important special investigations."

WAR NOTES.

VENEREAL INFECTION.—The following communication, printed in the *London Times*, reveals a condition of affairs as regards the proper care of venereal disease among British troops which compares far from favorably with that in practice in the United States Army:

"Sir,—Since the publication of my letter to you on December 27 I have had several more inquiries from Army officers, both combatant and medical, of which the following extract from a letter just received from the front is a fair example:

"I am taking the liberty of asking you for details of the disinfectants you mention. My reason for asking is that medical officers give different answers, and that recently officers have been ordered to speak to their men on these questions. Definite instructions would, therefore, be of obvious value."

I shall be grateful if you will insert this letter in order that the large number of persons now actively interested in this grave matter may realize the highly unsatisfactory conditions now obtaining in the medical department of the army in relation to the prevention of the widespread infection of our troops by venereal poisons. It is at least possible that some influential persons thus interested and informed may take some steps which will lead to this chaos being reduced to order. I have already tried and failed to persuade those who could take such steps, to make some definite and practical move in the matter. Such advance as is now being achieved is made more or less *sub rosa*. To be really effective against the existing danger, it must be made by outspoken, clear, and authoritative order. I have been personally informed by very many army medical officers of superior rank that, in spite of being thoroughly convinced of the absolute necessity of prophylactic medical measures, they are held back from performing what they feel should be regarded as their medical duty, by the existence of an army order which literally forbids such action.

Surely, if the highest army medical authorities may be restrained from action through either want of encouragement or positive hindrance from the political executive, it is the business of the people and Parliament to force the government to remove this scandal or to justify their attitude towards it.

I am, Sir, your obedient servant,

H. BRYAN DONKIN, M.D., F.R.C.P.
London."

BOSTON AND MASSACHUSETTS.

ESSEX SOUTH MEDICAL SOCIETY.—The third regular meeting of the Essex South Medical Society was held Wednesday evening, February 6, at the Lynn City Club. Papers were read by Dr. A. R. Kimpton of Boston, and Dr. M. A. Harrington of Danvers State Hospital Staff. Dr. Kimpton's talk was based on the conclusions reached as to the value of transfusion from a series of three hundred cases, while Dr. Harrington, who was formerly a regimental surgeon in the British army, talked on his experiences in the Service.

WEEK'S DEATH RATE IN BOSTON.—During the week ending January 26, the number of deaths reported was 282, against 272 last year, with a rate of 18.74, against 18.19 last year. There were 56 deaths under one year of age, against 34 last year.

The number of cases of principal reportable diseases were: diphtheria, 115; scarlet fever, 37; measles, 93; whooping cough, 80; tuberculosis, 82.

Included in the above were the following cases of non-residents: diphtheria, 15; scarlet fever, 9; tuberculosis, 10.

Total deaths from these diseases were: diphtheria, 6; scarlet fever, 5; measles, 3; whooping cough, 5; tuberculosis, 29.

Included in the above were the following non-residents: diphtheria, 2; tuberculosis, 2.

RARE DISEASES IN MASSACHUSETTS.—Following is a record of the occurrence of certain rare diseases throughout the Commonwealth during the month of November.

Actinomyces was reported from Danvers 1, and Westwood 1.

Anterior poliomyelitis was reported from Boston 1, Cheshire 1, Lowell 2, Ludlow 1, Lynn 2, Needham 1, Somerset 1 and Springfield 1.

Anthrax was reported from Boston 1 and Woburn 3.

Dog bite was reported from Boston 2, Brockton 1 and Holyoke 1.

Dysentery was reported from Barnstable 3.

Epidemic cerebrospinal meningitis was reported from Arlington 1, Boston 5, Brookline 1, Fall River 3, Lowell 1, Northampton 1, Salem 1, Springfield 1, Wilbraham 1 and Worcester 1.

Malaria was reported from Brockton 1 and Sutton 1.

Pellagra was reported from Northampton 1.

Septic sore throat was reported from Boston 1, Brookline 1, Chicopee 1, Haverhill 1, Lowell 1, Medford 1, Melrose 1 and Newburyport 1.

Smallpox was reported from Boston 1.

Tetanus was reported from Gardner 1, New Bedford 1, Sterling 1, Westfield 1 and Worcester 1.

Trachoma was reported from Boston 7, Chelsea 1 and Wakefield 1.

INFANTS' HOSPITAL FUND.—The treasurer of the \$25,000 fund being raised for the benefit of the Infants' Hospital announces that \$8876 have already been received.

THE BOSTON CITY HOSPITAL.—The forty-third Annual Report of the Trustees of the Boston City Hospital has been published and covers the period of time from Feb. 1, 1916, to Jan. 31, 1917. The entire expenditure for all departments of the hospital for the maintenance during the fiscal year was \$798,553.87. Of this amount \$355,873.94 was spent in personal service. There was collected for the care and treatment of patients of all classes the sum of \$150,825.10. During the year the facilities of the x-ray department were greatly improved by the subdivision of the rooms by means of lead-protected partitions and by the rearrangement of the apparatus, thus securing more working space and greater efficiency from the equipment. A special room has been provided for cystoscopic examinations. The total number of patients receiving bacterial vaccines was 352; number of visits to the clinic 2562; number of vaccine inoculations, 2348. The total number of patients under anti-syphilitic treatment was 526. Number of cases of syphilis of the central nervous system treated by intradural injection of salvarsanized serum or under observation, 146. The number of patients treated in the out-patient department was 35,867. The work of the pathological laboratory has been enriched by the opportunity of study of poliomyelitis which the epidemic of that year afforded. There was available post-mortem material from over thirty cases. Under Dr. Mallory the study of scarlet fever has been continued and the results published.

HOSPITAL BEQUEST.—By the will of the late Ellen F. Kennedy of Worcester, Mass., the Worcester Society for District Nursing receives a gift of \$5000. The Worcester Memorial Hospital is to share in the distribution of a trust fund.

The Massachusetts Medical Society.

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1917-1918.

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Miscellany.

A PLAN FOR THE CONSCRIPTION OF PHYSICIANS.

DR. D. S. GARDNER of Ohio has set forth in the January issue of the *Ohio State Medical Journal*, a plan for the conscription of the medical resources of the nation, which is sufficiently detailed and comprehensive to be worth reprinting. He states that:

"I do not urge conscription as a means of supplying the military service with sufficient medical men to care for its needs, but as a just and equitable method of securing a proper distribution of this service between the war-time needs of the present and future and the civilian requirements and educational demands of the future. It is not for a moment contended but that the military necessities have priority—if necessary to the last medical man of the country—but it is hoped that the subject can be systematized so that all the interests may have just representation.

Selective conscription will accomplish this.

Available information is not of a character upon which accurate statistics can be based, but for the purpose of a general analysis we may accept the declaration that the war requirements of medical men are one per 100 men, and that there is immediate need for the Medical Corps of the Army of 24,000 physicians and 120,000 enlisted men. It is further held that there are in the United States 90,000 of military age, 22 to 55 years. It is not at all held that 24,000 will be sufficient. In fact, other sources of information indicate that fully 40,000 will be required if the war be of two years' duration, or if the army should expand to two million men. Editorially, *The Journal of the American Medical Association* has recently said: 'There are in the United States approximately 145,000 physicians, consequently less than one in seven is needed for full preparedness. Is it possible that there shall finally be difficulty in obtaining voluntarily the medical men needed? We cannot believe so. It is inconceivable that conscription of physicians will ever be necessary. But if we are to get the 20,000 on the volunteer system there must be more eagerness for service on the part of the profession than has thus far been shown.'

This, at the moment, seems to about represent the situation.

Now what seem to be the facts? Conceding that there are 145,000 physicians in the United States, this census means the total of all ranks, ages and other conditions. It by no means represents what we are led to believe, that all are able-bodied, or capable of rendering some degree of service. The facts are that the age of physicians is greater than that of any other profession. There are no men in its ranks of 22 years, and it is a safe prediction that the average age is above 40 years.

Admitting that there is no difficulty now in securing sufficient medical men for the service or that there will be none in the future, it should also be conceded that the physical and professional exactions imposed upon applicants for medical service are such as to take out of the profession the practically perfect men only. May not this, then, exhaust the supply of effective men? It is this condition that warrants the plea that a halt should be called upon voluntary enlistments of the medical profession, in order that the greatest good may be accomplished for the military arm of the nation, for the civilian population and the educational needs of the moment.

It has been said that the average age of the medical profession is greater than that of any other profession. Again, upon no other class of men are duties more exacting. In none, probably, is the average of health lower. During the period of this war we cannot hope to replace medical men at a greater rate than 4000 per year, which is barely enough to take care of the civilian population. This rate cannot be main-

tained under present teaching and conscription conditions.

It is contended that no legislation could be enacted that would make selective conscription of the profession possible. Now we are discussing this only as it affects the volunteer physician in his relation to the present volunteer army and in no wise applies to the regular army.

There was vested in the President, by the terms of an Act of Congress dated May 18, 1917, authority to increase, temporarily, the military establishment of the United States. A study of this Act would, I believe, convince us that it would be possible to readily amend it by Congress, so as to provide the necessary legislation for the selective conscription of the medical profession. This act could provide as follows:

1. *Registration*—That each person entitled to practise medicine under the laws of the several states, territories and the District of Columbia, shall, upon a certain date, register at some point within the jurisdiction provided for the purpose. The data provided in the physician's registration card should, among other matter, contain the following: Name, age, academic degrees, college of graduation, with date; location, with years of practice at each point; admitted state of his health; detailed financial condition, as per a definite schedule; dependence, number of children; nature of practice, if of special character; years of training, with post-graduate teaching; hospital connections; experience, if any, in a military capacity, or in the handling of men.

2. *Administration*—(A) The President would be authorized to create and establish a General Medical Board, for the purpose of administering the act providing for the selective conscription of the medical profession. This board could be composed of the Surgeon-General of the Army, the Surgeon-General of the Navy, the Surgeon-General of the Public Health Service, the President and President-elect of the American Medical Association, the President of The American College of Surgeons, and the President of the American Public Health Association. Those not already provided for should be given suitable rank and pay.

(B) Upon recommendation from the governor, the President could appoint for each state and territory a State Board, which would have general jurisdiction in the administration of the selective conscription of physicians. These boards could be composed of the Surgeon-General of the State, the President of the State Medical Association, with an additional member or more recommended to the governor through the organized medical interests of the state. They would also have suitable rank and pay.

(C) In like manner there could be appointed for each councilor district of the states and territories a board of three resident members of the councilor district, which board would be the initial unit having in charge the operation of the service in like manner with the local boards of

the general conscription service. This board could be appointed through the representations of medical interests and have proportionate rank and pay with the other boards.

3. *General Duties*—Rules and regulations, not inconsistent with the Act creating the boards, could be made for the conduct of their business. The General Medical Board would receive from the Army, Navy, and Public Health Departments the assignment of quotas and the allotment of credits, and pro-rate them among the several states and territories. It would have general jurisdiction and be the final source of appeal in all matters relating to the administration of the Act. State boards would receive from the General Medical Board their quota requirements, pro-rate them among the councilor districts, act as an appeal board, and do such things as would expedite the handling of the work within their jurisdiction. The Councilor District Medical Board should have original jurisdiction in its territory of all physicians who registered, or who should thereafter register. Councilor boards would provide the means of and have entire charge of the matter of registering physicians in their district, and have exclusive jurisdiction in their respective areas over all questions to be heard and determined therein under the terms of the Act of Congress and the rules and regulations provided by the President.

GENERAL PROVISIONS.

The general provisions and operations of the Act would be about as follows:—It would begin with the registration of the physicians of each councilor district, which registration would be under the immediate direction and supervision of the councilor district board. Suitable penalties would be provided for a failure to register. The registration cards would remain permanently in charge of the district. This, when complete, would constitute the roster of the profession for military purposes. Speedily thereafter each physician registered would be submitted to a physical examination. The results of these examinations when tabulated would be to place him in one of four groups as follows:

1. Approximating 100% physical efficiency.
2. Approximating 75% physical efficiency.
3. Approximating 50% physical efficiency.
4. Approximating 25% physical efficiency.

The second effort would be to ascertain, as nearly as possible, the physician's professional qualifications and the nature of his special training, his social and business status, together with the degree of his dependence, and finally his relation to the needs of the community.

With this information at hand it would be possible to assign each member of the profession to one of four classes: A, B, C and D, for service as follows:

1. Active service with the forces at home or abroad. Classes A and B.
2. Active or passive military service in this country. Classes B and C.

3. Active service at home in the care of the civilian population and the educational needs of the medical universities. Classes A, B and C.

4. Passive service of medical men at home. Class D.

It has been made clear that every effort would be brought about to classify the physician: First, as to his physical fitness; second, as to his general and special professional qualifications; and, third, his degree of dependence and the need, if any, of the civilian population in the territory of his practice. If so, it should be easy to see that his services could be intelligently applied as follows:

The General Medical Board would receive from the War Department, as occasions require, the quotas of the medical needs of the volunteer service which could be divided into the following groups:

- A. For general medical service.
- B. For general surgical service.
- C. For special forms of service:
 - Orthopedic
 - Nervous diseases and psychiatry
 - Eye, ear, nose and throat
 - Laboratory
 - Pathology
 - Sanitation
- D. For hospital construction and equipment.
- E. For base or other hospital superintendence.
- F. For teaching in Army and Navy schools, hospitals and cantonments.

The general quotas would be pro-rated to the various state and territorial boards, and in turn by them to the councilor district boards in such numbers and division of service as would secure the filling of the quotas with expedition.

To further extend the detail of this analysis the Act could provide that all matters relating to medical service in the volunteer army should be in the hands of and pass through the General Medical Board having in charge selective medical conscription.

There should be a readjustment of the present Medical Officers' Reserve Corps. Enlistments and withdrawals should be made therefrom so that adequate provision could be had for:

1. The reorganization of the teaching requirements of medical colleges.

2. Reasonable precautions taken to safeguard in some degree the necessary needs of the civilian population.

Attention again is directed to the fact that there are about 100 medical universities in the United States, graduating annually 4000 students, none of which can open its doors with more than a fraction of its teaching force.

If the military demands are to be such as to cause a severe drain upon the number of medical men taken, early provision should be made for the care of the civilian population. To do this it is submitted that the following rules must obtain:

Establish in towns of sufficient size, public dispensaries in charge of Class C and D physicians.

There is no effort made to burden the present outline with statistical data in support of the contention that selective conscription of our profession is necessary to conserve its resources, but the following may be looked upon as quite accurately representing gross totals: There are in the United States approximately 140,000 physicians. The population is 110,000,000. The average age of the profession is above 40 years. The approximate number of active men are 100,000.

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|-------------------------|---------|
| Approximate for Class A | 40,000 |
| Approximate for Class B | 20,000 |
| Approximate for Class C | 20,000 |
| Approximate for Class D | 20,000 |
| | 100,000 |

Approximate number required for military service, 50,000.

These would be divided as follows:

| | |
|---------------------|--------|
| Class A | 30,000 |
| Classes B, C, and D | 20,000 |
| | 50,000 |

For the needs of the civilian population, 50,000 divided about equally among the classes A, B, C, D, or one physician to approximately 2500 of population.

These thoughts are submitted for your earnest consideration. The hope is expressed that your conclusions will not be hastily drawn. If the subject is not vital to the interests, first, of our country, then to our people, and finally to ourselves, it is of no value. If, upon the other hand, you feel as I do, then the matter should become one of common effort, to the end that we may secure a proper distribution of this great asset."

ENGLISH PIONEERS IN NAVAL MEDICINE.

To *The British Medical Journal* of December 29, 1917, we are indebted for an account of pioneers in the medical care of sailors of the navy.

"A seafaring nation like the British was naturally confronted early in its naval development with the problems of disease as they affect men who go down to the sea in ships. The subject did not escape the far-seeing mind of Richard Hakluyt, or Hacklewit as his name was generally pronounced and often spelt by his contemporaries. He was not a medical man, but a clergyman; though he modestly called himself simply a 'preacher' he was Archdeacon of Westminster and Chaplain of the Savoy. The tercentenary of his death fell on November 23rd of last year. From his boyhood he had been fascinated by the

'sweet studie of the historie of cosmographie,' and he had a prophetic vision of the important part to be played by tropical disease in colonial expansion, or 'plantation' as it was called in his day. In his dedication to Sir Robert Cecil of the third and last volume of the *Voyages, Navigations, Traffiques and Discoveries of the English Nation*, published in 1600, he refers to an essay on naval hygiene which is probably the earliest English work on the subject. This is a treatise by George Whetstone, which was not long ago unearthed and reproduced in facsimile by Dr. Charles Singer. Notices of the little work appeared in the *British Medical Journal* of November 23rd, 1912 (p. 1481), and November 13th, 1915 (p. 730). Hakluyt says: 'I was once minded to have added to the end of these my labours a short treatise, which I have lying by me in writing, touching *The Curing of hot diseases incident to travellers in long and Southern voyages*, which treatise was written in English, no doubt of a very honest mind, by one M. George Wateson and dedicated unto her sacred Maiestie. But being carefull to do nothing herein rashly, I showed it to my worshipfull friend M. doctor Gilbert, a gentleman no less excellent in the chiefeest secrets of the Mathematicks (as that rare jewel lately set forth by him in *Latine* doth evidently declare) than in his own profession of physicke: who assured me that it was very defective and imperfect, and that if hee might have leisure, which that argument would require, he would either write something thereof more advisedly himselfe, or would conferre with the whole Colledge of Physicians, and set downe some order by common consent for the preservation of her Maiesties subiects.' Whetstone was a gallant and a poet who had seen much of foreign parts, and in his travels had picked up some notions of naval medicine. But he was not a doctor; it is no wonder, therefore, that his work was defective and imperfect. William Gilbert, on the other hand, was the foremost scientific man of his time, and the advance of knowledge was greatly delayed by the fact that his scheme never reached fulfilment. Nearly a century had to elapse before there appeared a work entitled *An Account of the Distempers that are incident to seafaring people With observations on the diet of Seamen in His Majesty's Navy*, by the 'Physician to the Blue Squadron of His Majesty's Fleet' (London, 1696). Gilbert seems to have been in high repute for his knowledge of the diseases of seamen. In a recent paper giving an account of his life and work Dr. Singer quotes the following entry from the Acts of the Privy Council under date March 22nd, 1588, when the navy must have been anticipating the arrival of the Armada which appeared off our coasts a few months later: 'Whereas a dysease and sickness began to encrease in her Majesties Navye, for remedie of the dyseased and for staie of further contagion their Lordships thought meet that some lerned and skillful phisicians should pres-

ently be sent thither; and for that their Lordships hard that good reporte of the sufficiency learning and care of Dr. Gilbert, Dr. Marbeck, Dr. Browne, and Dr. Wilkinson, as they were though very fyt persons to be employed in the said Navye to have care of the helthe of the noblemen, gentlemen, and others in that service,' therefore these physicians were required 'to put themselves presently in a readynes to goe downe to the Navye, and to carry with them a convenient quantytie of soche drogues as should be fyt for medycine and cure; and upon their repaier and conference with the Lord Admyrall soche order should be taken for their entertainment as should be to their contentement.' It would be interesting to know if this scientific mission was ever accomplished, and, if it was, what came of its work.

If Gilbert must share with others the glory of creating naval medicine, he stands alone in fields of scientific exploration which have been of incalculable advantage to mankind. He was referred to by Sir Thomas Barlow in his Harveian Oration last year as a pioneer in the study of magnetism, but he is more adequately described in the *Encyclopaedia Britannica* as the father of electric and magnetic science. His book, *De Magnete*, is the record of eighteen years of patient experimental work, and contains a great number of important observations on the properties of the magnet. He framed a theory to explain magnetic deviation, investigated the dip of the compass needle, and propounded a method of determining latitude by its means. He was the inventor of two instruments designed to enable seamen 'to find out the latitude without seeing sun, moon, or stars.' He founded the science of electricity, and placed it on a solid basis of experimental fact. He also did much work in chemistry, but the records of his experiments have, unfortunately, been lost. He had a hand in the preparation of the first British pharmacopoeia, although the work did not see the light until after his death. This was a misfortune, for he hated everything savoring of quackery, and it can hardly be doubted that his influence would have prevented the inclusion of much fantastic and foolish stuff which found its way into the work. Summing up Gilbert's scientific achievement in addition to his pioneer work in electricity and magnetism. Silvanus Thompson says: 'He also made notable contributions to astronomy, being the earliest English expounder of Copernicus. In an age given over to metaphysical obscurities and dogmatic sophistry, he cultivated the method of experiment and of reasoning from observation, with an insight and success which entitles him to be regarded as the father of the inductive method. That method, so often accredited to Bacon, Gilbert was practising years before him.'

This remarkable man came of a family which was probably connected with Sir Humphrey Gilbert, the famous explorer, and half-brother of Sir Walter Raleigh. He was born at Colchester

in 1544, and educated at St. John's College, Cambridge, of which he became a Fellow and mathematical examiner. He took the degree of M.D. in 1569. He then spent some years in travel abroad, visiting Italy, where he made the acquaintance of Giordano Bruno, the martyr of free thought, Sarpi, and probably Galileo. On his return to England he settled in London, where he practised his profession with great success. He lived on St. Peter's Hill, between Upper Thames Street and Little Knightrider Street, where he used to gather together a society or college of men interested in the study of nature. This, Dr. Singer says, may be regarded as the earliest scientific association in England, and perhaps in Europe. Gilbert was successively censor, treasurer, and president of the Royal College of Physicians. In 1601 he was appointed physician to Queen Elizabeth, who trusted him as a doctor, and appreciated his work as a scientific investigator. How genuine was her appreciation is proved by the fact that, although by no means liberal in the matter of money, she gave him a pension to help him in the prosecution of his researches. Gilbert attended Elizabeth on her deathbed in 1603 and was appointed physician to her successor. He lived only a few months afterwards, dying, probably of the plague, towards the end of 1603.

The medical profession may well be proud of this great scientific pioneer."

OCCUPATIONAL DISEASES.

THE Department of Health of New York City is taking steps to control more efficiently the incidence of certain preventable occupational diseases. The following notice is published in its health bulletin:

In its work for the reduction and control of the so-called industrial diseases, the Department of Health makes extensive use of the information gathered as the result of medical and sanitary surveys in particular industries and of the results of the medical examination of the workers at the occupational clinics. While this has already yielded excellent results, especially in certain trades, the Department feels that private physicians could be of much greater service in this work than they have been in the past. If physicians would report, as they are required to do, instances of occupational diseases coming to their notice, the Department would undoubtedly be able to pick up many additional clues in industrial hazards than are now suspected.

During the year 1917, a total of 139 cases were reported to the Department of Health by private physicians and hospitals. As can be seen from the following table these related principally to caisson disease, lead poisoning and anthrax. It is improbable that this number represents all the instances of industrial diseases in a city of over 5,000,000 people.

Will not the practising physician hereafter notify the Department of Health of every case of suspected industrial disease which comes to his notice? The information is desired not only for the correction of unhygienic and insanitary conditions existing in some particular shop or factory, but also to gain a complete knowledge concerning the hazards to which industrial workers are exposed in this city. The patients are visited only with the consent of the attending physician, and all information obtained is kept strictly confidential.

While certain diseases, such as anthrax, caisson disease, and lead poisoning almost always prompt the physician to make inquiries regarding the patient's occupation, the fact is usually lost sight of that many common diseases are often directly traceable to the patient's occupation. Among these the following may be mentioned: Tuberculosis, pneumonia, asthma, bronchitis, circulatory diseases, arteriosclerosis, apoplexy, endocarditis, myocarditis, nephritis, diseases of the skin, diseases of the nervous system, orthopedic defects.

Whenever occupation is a factor in any of these diseases, the case should be reported to the Department of Health. It is especially important to report (as required by law) all cases of arsenic, mercury, phosphorus, bronze, wood alcohol, anilin, brass, acids, gases (carbon monoxide, illuminating, natural gas, and others), bisulphide of carbon, wood naphtha.

THE MASSACHUSETTS VENEREAL DISEASE PROGRAM.

III.

BY EUGENE R. KELLEY, M.D.,

Director, Division of Communicable Diseases.

(Continued from page 173.)

REPRESSIVE MEASURES.

UNDER the term, "Repressive Measures," may be conveniently grouped a number of anti-venereal measures which involve the joint utilization of police power and social agencies.

The most significant feature of modern programs for the control of venereal diseases is their frank recognition of the importance of sane repression, along with measures of education, diagnosis and treatment.

In this field the medical man and the public health official must seek the advice, coöperation, and active help of the judiciary, the police, the penologist, the social worker, and all agencies working towards physical and moral rehabilitation of the ignorant and unfortunate.

For convenience of reference, the principal repressive measures contemplated in the Massachusetts Venereal Disease Program may be listed under these heads:

1. Suppression of prostitution.
2. Venereal control in penal population.
3. The venereal quack problem.
4. Indirect control through the license power of the State.

1. *Suppression of Prostitution.* All workers in the venereal field soon come to recognize the relationship between prostitution and the spread of venereal diseases. Prostitution constantly replenishes the great reservoir of venereal infection, or, in the vivid phrase of Major W. F. Snow, prostitution is to venereal disease what the anopheles breeding swamp is to malaria.

Modern expert testimony, both medical and police, is a unit in condemning all systems of segregation of prostitutes, with or without "certificates of health" in connection therewith.

The futility of all systems of segregation can be best seen by noting that in those cities of Europe where it has been most thoroughly carried out, the officials charged with its enforcement frankly admit that only one-fifth to one-tenth of the prostitute class are ever enrolled. The remainder continue to ply their profession vigorously as clandestine prostitutes.

No practical medical or social worker has any illusions as to the immediate or remote prospects of eliminating prostitution. But experience has shown that many measures can be carried out in reference to prostitution by joint action of the courts, health authorities, and institutional authorities which will materially lessen venereal infection and mitigate the evils of prostitution generally.

These measures may be summarized as:

- (a) Breaking up the alliance between prostitution and alcohol;
- (b) Repression of street solicitation;
- (c) Suspended sentence-probation procedures by joint action of judiciary and health authorities;
- (d) "Follow-up" work by health officials to reach the clandestine prostitute, not amenable to control through the courts, and exercising control over her through quarantine or its alternative—supervised treatment—in an institution if necessary;
- (e) Imposing of reformatory sentences in appropriate cases;
- (f) Recognition of the mentally deficient prostitute, and providing proper treatment for her by commitment to an institution for the feeble-minded.
- (g) Analogous procedures for the confirmed alcoholic or "narcotic" prostitute;
- (h) Social rehabilitation of the clandestine or immature prostitute by educative methods, moral persuasion, providing material aid through period of treatment, and finding permanent employment for her.

To carry out successfully any such program, there must be close "team-work" among many public and private agencies. The most charac-

teristic feature of this new program against prostitution is the emphasis placed upon prostitution as an epidemiological rather than as a penal problem, and the logical deduction therefrom of seeking to apprehend and treat the individual prostitute primarily as a disease-carrier, instead of officially ignoring her existence. In the Massachusetts program the skilled "follow-up" worker employed by each approved venereal clinic is chiefly depended upon to get in touch with the prostitute patient, unravel her history and epidemiological record, and bring such corrective agencies and methods to bear upon her case as may seem most advisable in the individual instance.

2. *Venereal Control in Penal Population.* The inmates of penal institutions are notoriously subject to venereal infections. Routine Wassermann examinations show very high percentages of positive reactions among the inmates of the State penal institutions. In the county jails and houses of correction, there are constantly numerous short-term prisoners infected with either gonorrhea or syphilis, who serve their brief terms and return to their former homes or haunts as dangerous spreaders of infection as before. A very far-sighted statutory provision exists (Chapter 75, Revised Laws, Section 48), under which a prisoner infected with syphilis may be restrained beyond his term of commitment for the purpose of treatment.

The problem has been to find all the infective prisoners. Legislation designed to accomplish this result has been introduced jointly by the State Department of Health and the State Bureau of Prisons, requiring thorough physical examinations of all inmates of penal institutions committed for thirty days or more.

3. *The Venereal Quack Problem.* No phase of the entire venereal problem calls for a more thorough-going program of repression than that of the venereal quack. It is difficult to use the language of restraint in referring to these pariahs of medicine. But hitherto the State has provided nothing in their place. Unscrupulous as they all are, inadequately trained as most of them are, they have supplied a widespread demand among the venereally infected for some easily located place of treatment, open at hours that fitted in with the patient's spare time. Their treatment has been, for the most part, crude and unscientific, even when it has not been downright fraudulent; but by their unscrupulous utilization of all the devices that the art of modern advertising can conceive, to hundreds of thousands of their defrauded victims they are made to appear as the veritable lineal descendants of Aesculapius himself.

With the establishment of free or low-pay clinics throughout the State, where the highest quality of scientific treatment for venereal diseases is made accessible to everyone, there will vanish the last excuse for the existence of the advertising venereal quack. Fortunately, there

already exist ample statutory grounds for suppressing the quack. All that is needed is vigorous action by health authorities and district attorneys to make this unsavory specialty only a disagreeable memory in the history of Massachusetts medicine.

One state, Oregon, has shown the way and completely eliminated the venereal quack from its borders, and what Oregon can do surely Massachusetts can do also.

4. *Indirect Control through the License Power of the State.* In the license power of the State we possess a powerful weapon in the fight against venereal diseases, if only that power can be fully utilized. Among such licensure methods may be included:

- (a) Control through medical license power.
- (b) Control through druggist license power.
- (c) Control through liquor license power.
- (d) Control through marriage license power.

An amendment to the medical licensing law, passed by the 1917 General Court, places in the hands of the Medical Registration Board of the Commonwealth the power to revoke medical licenses for fraudulent conduct. Through this wise provision, much assistance in the fight against the unscrupulous licensed practitioner, fraudulently specializing in venereal diseases, is expected.

The recent prompt action of the liquor licensing boards of some of our large cities, following reports of conditions by Federal War Department investigators, has been a most happy illustration of what can be accomplished through the license power vested in these boards in reducing the opportunities for venereal infection.

Several states have sought to lessen venereal disease transmission through the enactment of laws aimed at preventing the marriage of the venereal carrier.

One of the most serious of venereal disease problems is the widespread custom of drug-store prescribing, and of actual treatment of venereal diseases, especially gonorrhea, by drug clerks. In the words of Dr. Franklin Martin, Chief of the Medical Section of the Council of National Defense, "treatment of these cases by drug clerks is nothing short of criminal in view of what we now know of the effects of gonorrhea and syphilis. Drug-store treatment is synonymous with no treatment." Because it believes that drug-store prescribing for venereal diseases is a most serious evil, and because it firmly believes that the ethical druggist will welcome any effective measure to mitigate this evil, in spite of the incidental inconvenience such a measure must bring him, the State Department of Health has introduced a bill prohibiting the sale of venereal remedies, except upon a physician's prescription. This proposed law follows very closely the mechanism of the anti-narcotic law already on the statute books.

Correspondence.

VESALIUS AND LOUVAIN.

Boston, January 18, 1918.

Mr. Editor:—

In a report of the librarian of the University of Louvain, referring to the destruction of the University buildings and the library by the Germans, there occurs a statement which may throw an interesting side light on the life of Andreas Vesalius. The passage is as follows:

"Our collection of incunabula was among the most important and most valuable. We had from 800 to 1000 specimens We kept, in large cupboards, a fine collection of Flemish bindings of the 16th and 17th centuries, of every sort. We guarded the whole with a jealous care for all the precious memorials of the ancient University. Who has not admired the finely-preserved original of the charter founding our University in 1425? Who has not heard speak of the copy on vellum of the famous work of André Vésale, *de humani corporis fabrica*, a copy of which Charles V. presented to our University? The burning of the University buildings has completely destroyed the treasures kept in the library of the University of Louvain. In their night of drunken and murderous orgy the German soldiers spared nothing. Those who have this crime against learning and civilization on their conscience will have to bear, in the judgment of history, a heavy and lasting responsibility.

"P. DELANNOY,

"Librarian of the University of Louvain."

In the latter part of 1536, Vesalius returned to Louvain from Paris and there conducted public anatomical demonstrations and lectures and at the same time he began to experiment with China root, a new remedy for pleurisy. The father of Vesalius was apothecary to Charles V. and, in 1538, he presented the anatomist's first plates to the Emperor. In the same year Vesalius published these plates ("*Tabulae Anatomicae*") and in 1543 the "*Epitome*" of his great anatomical work appeared at Basel as a sort of introduction to and summary of the "*Fabrica*" of the same year. This work, dedicated to Philip, the son of Charles V., is extremely rare.

According to Ball (Andreas Vesalius, the Reformer of Anatomy), two beautiful copies of the "*Epitome*," printed on vellum, are in existence. One is in the British Museum and is thought to be the copy which was owned by the celebrated Dr. Richard Mead; the other one is in the possession of the University of Louvain. It was evidently this second copy of the "*Epitome*" on vellum, which was destroyed when the library of the University of Louvain was burned. In fact, the words "*de humani corporis fabrica*" appear in the rather long title of the "*Epitome*," this being in harmony with the report of the Librarian of the University of Louvain and with Ball's statement. This vellum copy of the "*Epitome*" must, therefore, have been in the library at Louvain at least 371 years. Dr. Richard Mead (1673-1754) whose vellum copy of the "*Epitome*" is in the British Museum, was a scholarly man and could well afford to purchase so expensive a work, since he was the most prosperous practitioner of his time, making as much as £7000 in one year, an enormous amount in those days when the purchasing power of money was seven or eight times what it is now.

In 1544, a year after the publication of the "*Fabrica*," Vesalius was appointed Court Physician to Charles V. (who was a great admirer of his skill as a surgeon) partly because he had cured Charles of what was thought to be a fatal disease and partly because of the success of an operation (probably a

decompression for a fractured skull) on the head of the grandson of the Emperor. Is it any wonder then, that as a measure of gratitude and admiration, Charles V. should have presented to the native country of the Belgian anatomist the fine copy of the "*Epitome*" which was carefully preserved until the University of Louvain was destroyed during the early months of the World War? At the fourth centenary of the founder of modern anatomy (December 31, 1914) his native University was already a mass of ruins and with it there was destroyed that rare parchment presented by a royal admirer.

ISADOR H. CORIAT, M.D.

OBSTETRICS AND THE MEDICAL PROFESSION.

Mr. Editor:

I beg a few words comment on the unique appeal of Mrs. Lowell in the *Boston American* of January 11, relative to the new maternity clinic at the Brigham Hospital.

As many of your readers may not have seen the article, I will relate Mrs. Lowell's plans for the uplifting of the people who hitherto have been depending on common doctors for obstetric care:

For the fee of \$25.00, Mrs. Lowell and the Peter Bent Brigham Hospital will furnish first-class medical care at the patient's home, including nurses, social workers, etc.

Mrs. Lowell goes on to say that the poor have the best obstetric care (shades of our student days!) being attended by hospital doctors, that the rich can have the best of care if they know enough to hire it, but that the common people are in a bad way.

This line of argument is quite familiar to the profession, originating with a prominent doctor some two years ago. Since that time we have had frequent repetitions of the statements by male and female followers of this doctor.

It would be interesting to the profession to know if the Brigham Hospital is a party to this covert vilifying of physicians, also it would be interesting to know if the purpose of the Hospital is to compete with physicians in the neighborhood.

My understanding of the purpose of the founder of the Brigham Hospital is that it was to be a hospital for the sick poor of Suffolk County.

We all know how far it is from what its founder intended it to be.

Under our present economic conditions there is a real field for help among the unfortunate poor of our city in regard to obstetric care. We all know that up to the time the maternity ward was opened at the Boston City Hospital, that it was impossible to get a free maternity case into our Lying-in hospitals, yet these same hospitals give the public the impression that they are free.

It would be a wise and profitable undertaking for the state to furnish experienced physicians to attend labor cases in families which cannot afford a doctor.

As conditions are now, these cases are attended in most part by students and midwives, notwithstanding Mrs. Lowell's unwarranted assertions, and the lot of these parturient women is not an enviable one.

Very truly yours,

CHARLES MALONE, M.D.

5 Glen Road, Jamaica Plain, Mass.

SOCIETY NOTICE.

THE HARVEY SOCIETY.—The sixth lecture of the series will be held at the New York Academy of Medicine, 17 West Forty-Third Street, on Saturday evening, February 9th, 1918, at 8.30 p.m., by Dr. J. Gordon Wilson, Professor of Otolaryngology, Northwestern University, Chicago. Subject: "The Effect of High Explosives on the Ear."

DR. F. H. PIKE, Secretary.